

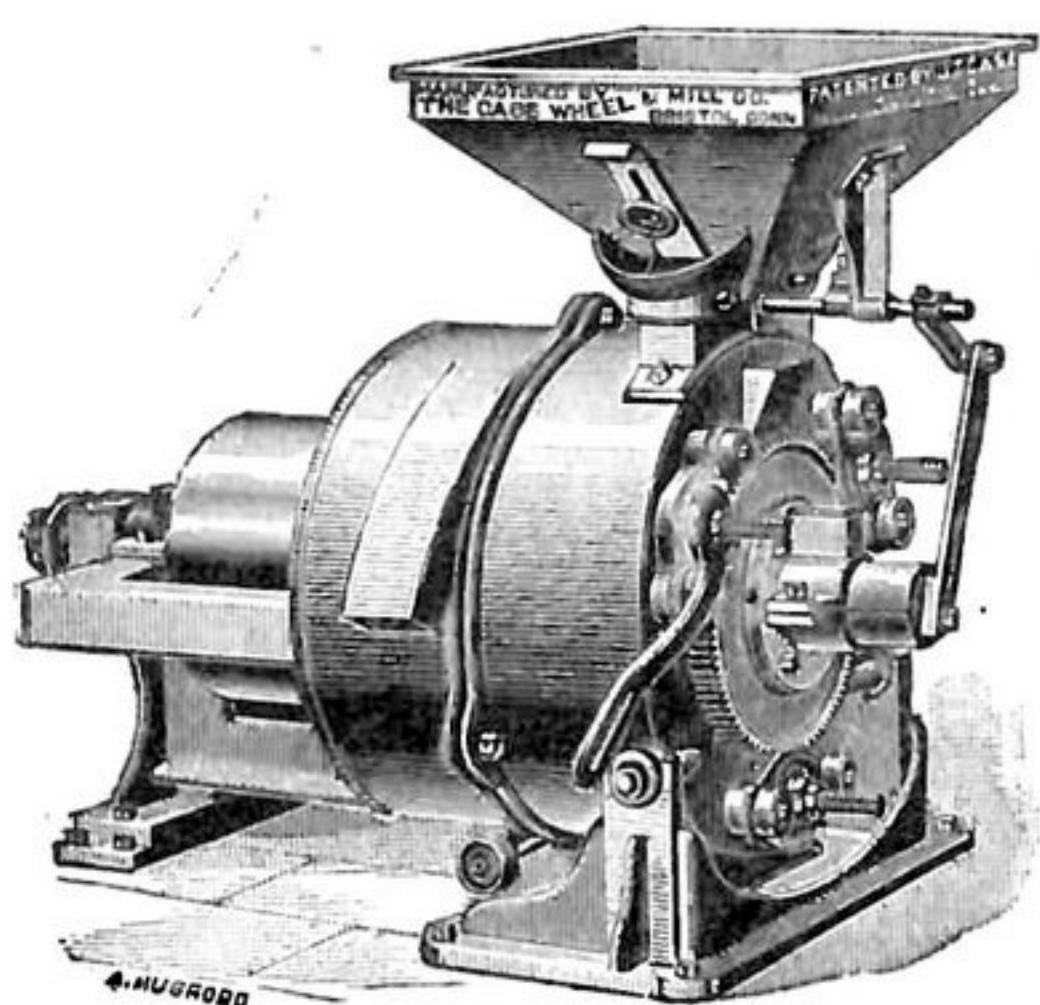
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY MORNING.

VOL. XIX. No 21.

BUFFALO, N. Y., JANUARY 21, 1889.

\$1.50 PER YEAR.



VICTORY OVER ALL OTHERS.
SINGLE & DOUBLE VERTICAL GRINDING MILLS.
(J. T. CASE'S PATENT.)

FACTS ARE MIGHTIER THAN ASSERTIONS. READ WHAT THEY SAY:

"Our 20-inch mill made by the Case Wheel & Mill Co. is in every respect satisfactory, easy to handle, and best results obtained of any mill in the country, with same quantity coal and power."—A. S. RUSSELL & Co., Meriden, Conn.

"Superior to any mill in use."—GEO. WESTON, Bristol, Conn.

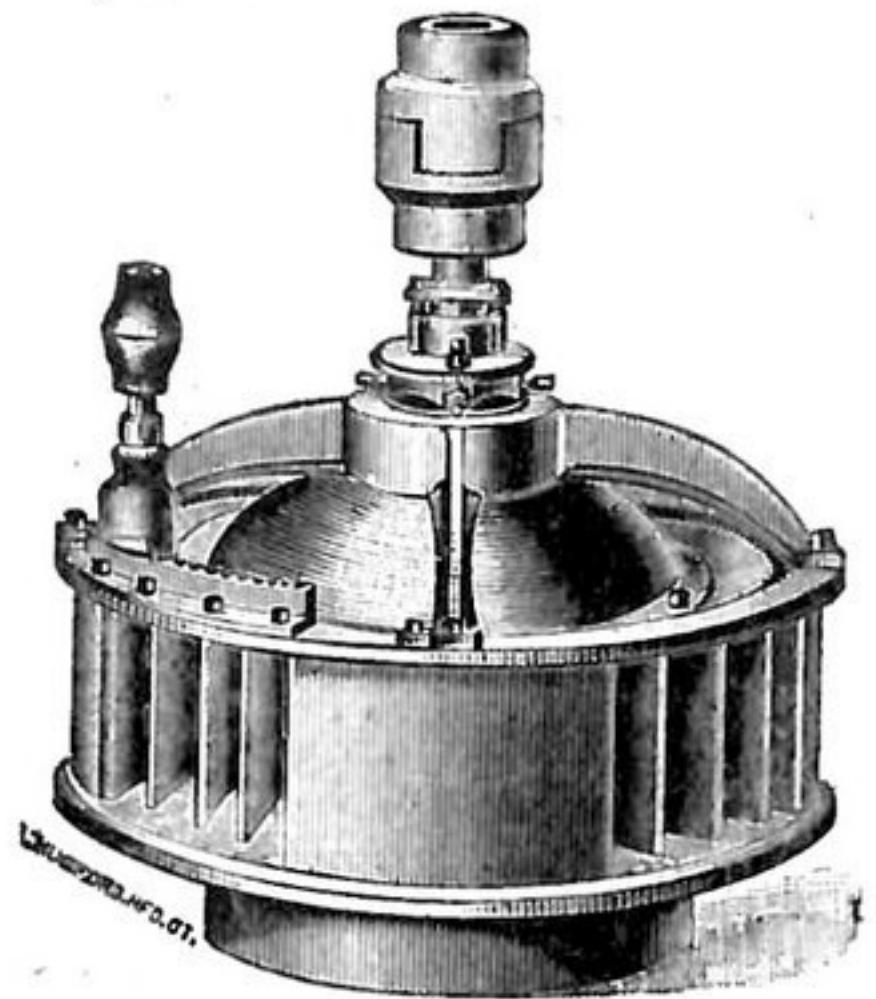
"The best satisfaction in quantity and quality."—CHILD'S ELEVATOR, Manchester, Ct.

"We take pleasure in recommending it."—GARLAND LINCOLN & Co., Worcester, Mass.

SEND FOR CATALOGUE—ILLUSTRATED AND DESCRIPTIVE.

The Improved National Turbine Water Wheel

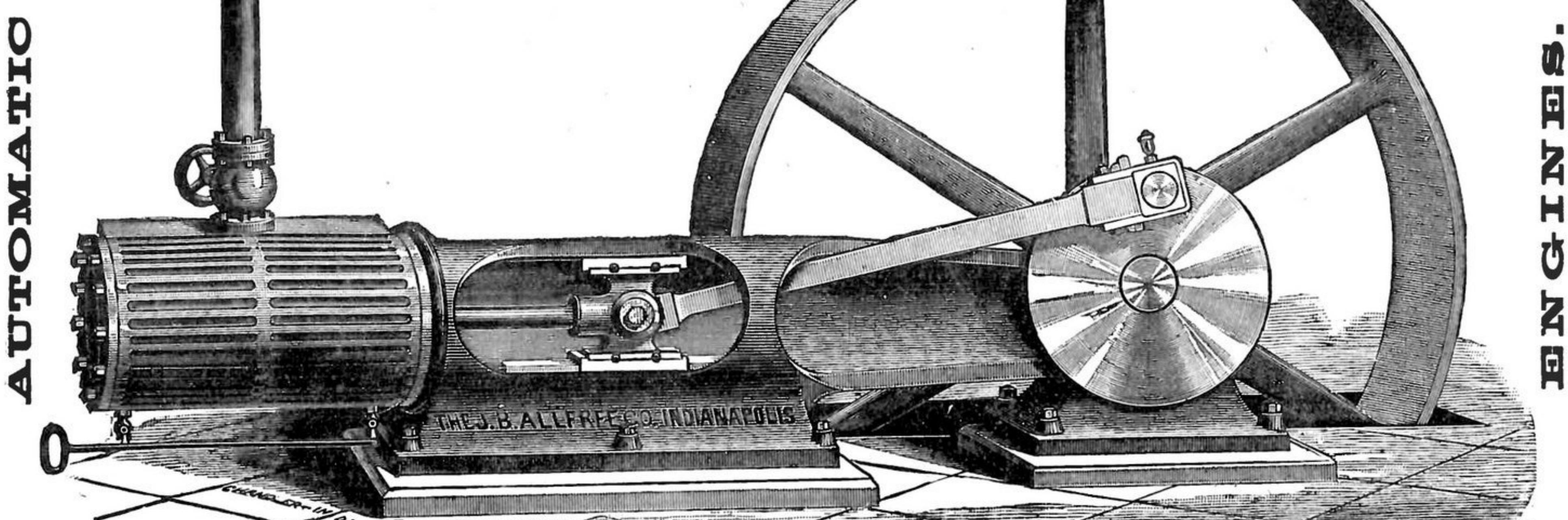
The Best for Economy; The Best for Durability; The Best for Power. ONE THOUSAND FIVE HUNDRED NATIONAL WATER WHEELS IN USE Prove that our Assertions are Supported by the Leading Manufacturers in the Country. Send for illustrated catalogue and prices to the manufacturers.



The Case Wheel & Mill Co., Bristol, Conn.

NOTICE.

The J. B. ALLFREE CO., INDIANAPOLIS, IND., wish to inform their milling friends and the trade in general that they are prepared to build and equip throughout mills of any capacity in a style that can not be excelled. Bolting Cloth Trade a Specialty.



ORDERS RESPECTFULLY SOLICITED FOR SPECIAL MACHINES WHICH WE MANUFACTURE.

THE KEYSTONE FOUR ROLLER WHEAT MILL.
THE KEYSTONE FOUR HIGH CORN MILL.
THE SUCCESS BOLTER AND DRESSER.
THE J. B. ALLFREE PURIFIER.

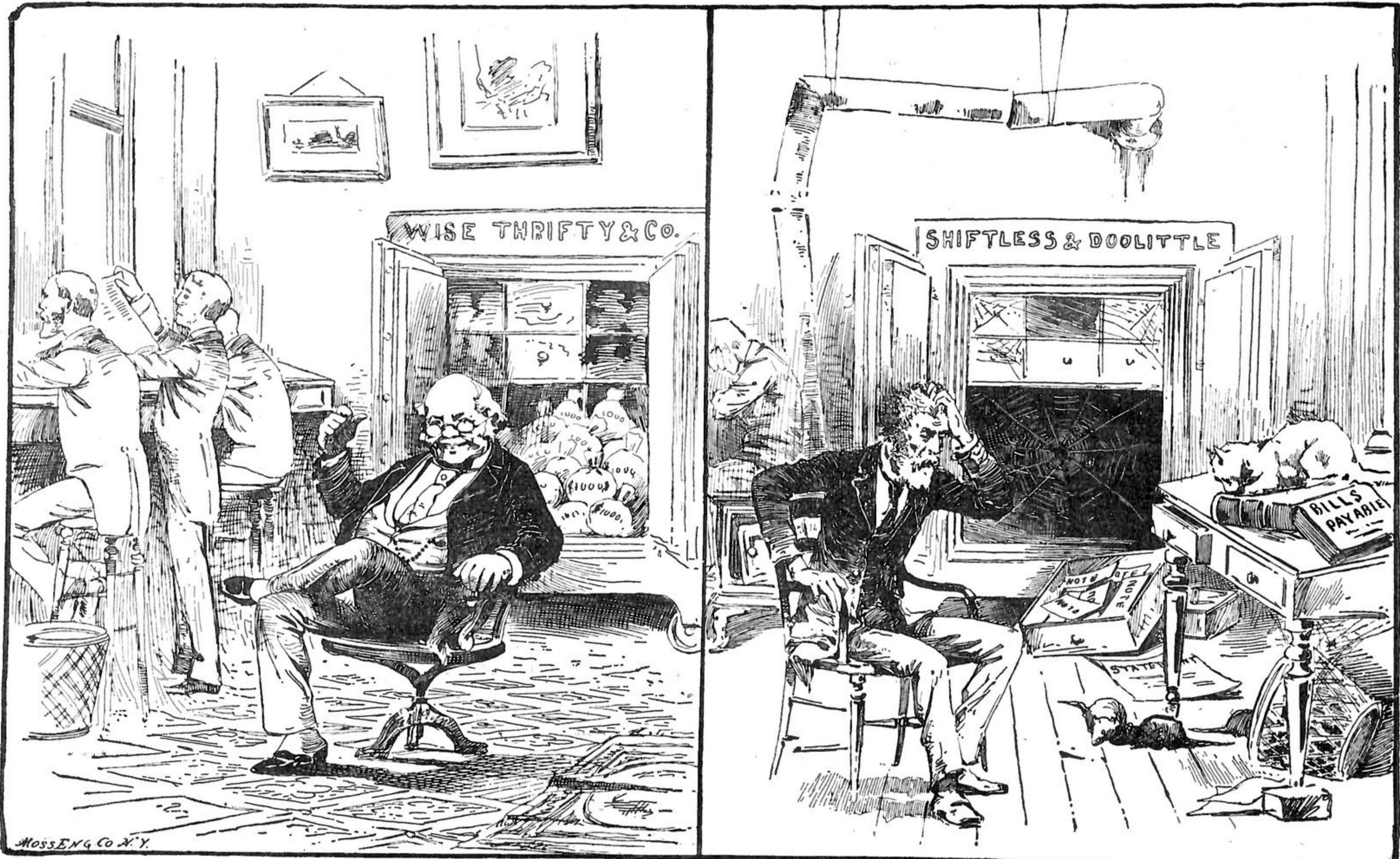
THE J. B. ALLFREE CO.'S NEW BOLTING CHEST.
THE J. B. ALLFREE CENTRIFUGAL REEL.
THE CLIMAX BRAN DUSTER.
THE ALLFREE FLOUR PACKER.

ADDRESS FOR ILLUSTRATED DESCRIPTIVE CATALOGUE,

The J. B. Allfree Co., Indianapolis, Ind.

RIGHT • TO • THE • POINT

"The best laid plans o' mice and men
Gang aft agley."
But the Case Mill gets there every time,
So all the millers say.



"WE PUT IN A CASE SHORT SYSTEM MILL."

Old father Wise, with twinkling eyes,
Points backward to the well-filled till,
While Thrifty scans the new made plans
To double up the CASE SHORT MILL.

"WE DIDN'T!"

Old Shiftless weeps—the sick cat sleeps,
Doolittle has gone out to pray,
The spiders fill the empty till,
While hungry rats now hold full sway.

JUST TAKE A LOOK AT WHAT THIS MAN WRITES:

THE CASE MFG. CO., COLUMBUS, OHIO.

Gentlemen: Enclosed please find settlement in full of my account. The 4-break mill works splendid and am well pleased with it. The Inter-Elevator Flour Dressers are everything you represent, both in capacity and excellence of work. The Special Purifiers are a fine machine and far ahead of the Purifiers you put in my other mill in '83. Am especially pleased with the millwright work. It is well planned and finished in a good, workmanlike manner. I can not praise your millwright and his work too highly.

Yours resp'y,

ELYRIA, OHIO, Oct. 10, 1888.

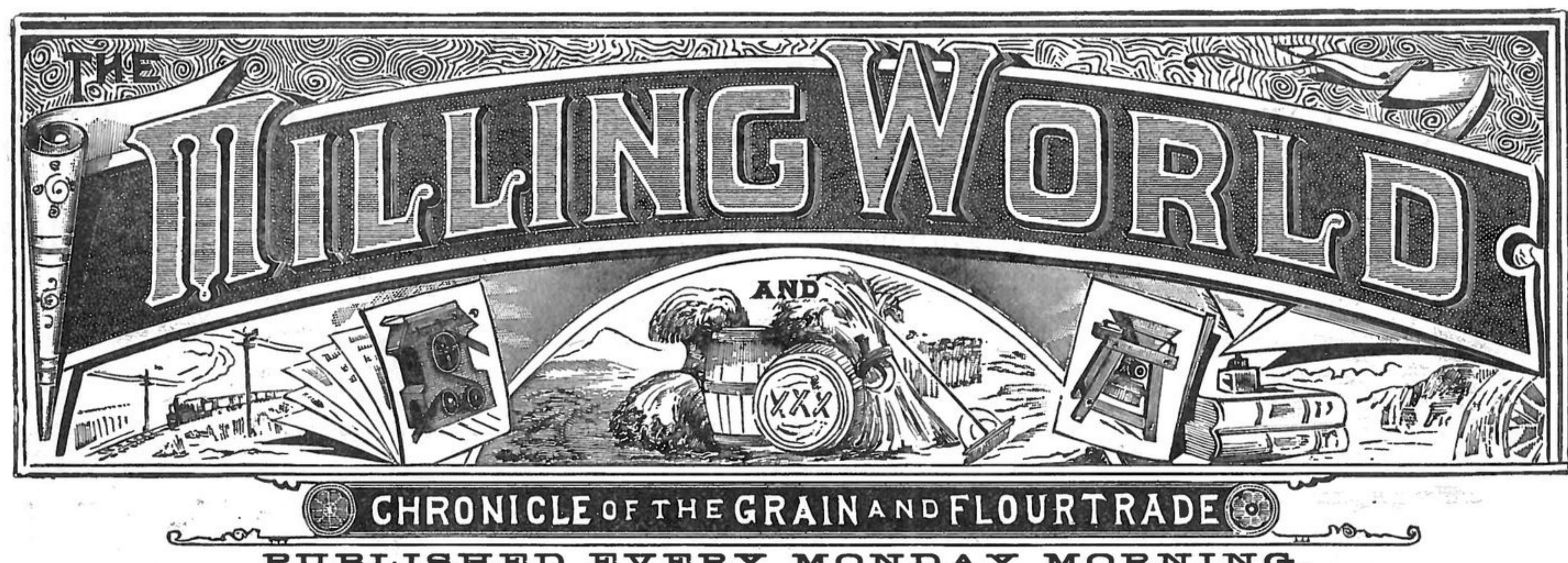
GARRET REUBLIN.

If you want a successful mill write us. Long System Mills remodeled on short notice. Case Short Break Corrugations put on any make of rolls. Our Roller Corn Mills are a most profitable investment. Now is the time to put one in your mill. Our Aspirator and Purifier for Corn Meal will astonish you. Belting, Gearing, Elevator Supplies, Silk and Wire Cloths shipped promptly on receipt of order. If you want mill supplies of any kind write us. Estimates on mills of any desired capacity furnished on short notice. Write us at once and state the capacity wanted and number of grades of flour you wish to make. The Automatic Feed on our machines makes them superior to all others. Catalogues and Circulars Mailed on Application.

RE-DRESSING ANY MAKE OF ROLLS PROMPTLY A SPECIALTY.

THE CASE MANUF. CO., COLUMBUS, OHIO.

PLEASE MENTION "THE MILLING WORLD."



CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY MORNING.

VOL. XIX. - No. 21.

BUFFALO, N. Y., JANUARY 21, 1889.

\$1.50 PER YEAR.

PREPARE to see at last an "official" statement of a crop of 430,000,000 bushels of wheat in the United States in 1888. The truth was slow in getting born, but it was bound to be born just the same.

READERS of THE MILLING WORLD are notified that a convention of the merchant millers of the winter wheat section will be held at Indianapolis, Ind., on Tuesday, February 8. Important business will be transacted, and a large attendance of representative millers is desirable. Secretary D. H. Ranck, editor of "The Millstone," informs us that the outlook for a large meeting is good. Let every miller in the winter-wheat section dust his jacket and attend.

BULLING the wheat crop during the past season has been a costly experience all around for the millers and grain dealers of the United States. The false reports of disaster have been believed in Europe, and some of our best customers have sought other sources of supply. Export trade has been needlessly reduced, and this country has on hand a good deal of both grain and flour that might have been sold abroad had not the bull element prevailed in manipulating the crop. It is always too late to mend after a thing is hopelessly broken. Will the history of the 1888 crop be repeated on the 1889 crop?

READERS of THE MILLING WORLD will not be surprised to learn that the government crop report increases the estimate of the wheat crop of 1888 from 405,000,000 to 415,000,000 bushels. We shall not be surprised to see it again increased by several millions of bushels. This journal has steadily insisted, ever since last June, that the crop reports were unreliable, and that there was at no time really good reason for looking for a hopelessly short and inferior crop of wheat. The August frosts were grossly exaggerated, and now, with a crop of 415,000,000 bushels admitted, and further increases in estimates probable, the justice of our contention is confirmed.

Not by way of advice, at all, we suggest to the managers of the meeting of winter-wheat millers at Indianapolis, on the fifth of February, that a great decrease in pointless oratory will greatly increase the possible and probable value of that gathering. Some of the mouths that took their owners to Milwaukee will doubtless take those same tiresome and unfortunate owners to Indianapolis, and it would be a saving of time and an insuring of success to hire a blacksmith to rivet those mouths tight shut before the meeting is called to order. Life is short, and oratory like that so voluminously poured out at Buffalo and Milwaukee is too, too long for a short life. Messieurs Managers, divide your attendants into two classes, the business men and the orators. Bring the business men to the floor and let them control the meeting. As for the orators—well, bottle 'em up until the inevitable fine banquet is ready. From that time on they can drivel without wasting valuable time or checking valuable action. Even dynamite is excusable, if these oceanic, Niagaratic orators can be squelched by no other instrumentalities. Don't let the Indianapolis meeting fall into their—mouths!

AN English cotemporary is laboring to show that most of the so-called "Yankee inventions" are really old English fads of centuries past. Particularly are American milling machines criticised as old British inventions done over. It is all very comical to read such things, but no one believes that American milling machinery bears enough resemblance to old European traps to justify the charge of piracy and adaptation. If the Europeans could not perfect what they claim to have invented, they should, while using the Yankee machines, be modest in making claims of priority of invention.

MANY important mills are running on short time this month. The curtailment of production may serve to lighten the load on the home markets, but what of the foreign markets? If consignments abroad are stopped for any considerable time will not the decrease in flour stocks in British markets encourage the British millers to increase their output? Would that not increase British imports of Russian and other wheats? Would that not crowd out more and more American wheat from Great Britain? Would not all this result in greatly decreasing the trade in both American wheat flour and grain in Europe? English millers are everywhere doing far more work in January than they have been doing for months and years, and those who think that business may be improved best by stopping business totally should be warned that, once they are pushed out of certain markets, it will be not an easy matter to get entrance thereto again.

PROGNOSTICATOR Prime, who is never happy except when he is thoroughly miserable, and who generally tinges his crop prophecies with raven croakings and bilious gloom, must feel pleased to see the government crop report for January advancing the wheat crop of 1888 from 405,000,000 bushels to 415,000,000 bushels. He is never so sure that he is absolutely right as he is when most absolutely and incorrigibly wrong, and to see his predictions of a "disastrous failure" mocked by a crop of 415,000,000 bushels should throw him into convulsions of joy. That is quite close for him to come. A few hundreds of millions of bushels one way or the other don't amount to any thing in the case of a prophet "who has accurate information" and who "draws sound conclusions from the information which he receives from thousands of intelligent correspondents in all parts of the wheat area." To plain people, through whose whiskers the zephyrs of prophecy have never whistled, the astounding discrepancies mean a good deal. Here is a prophet predicting in June last a "disastrous failure" of the American wheat crop. An average crop is about 450,000,000 bushels. The 65,000,000 inhabitants require for food and seed about 350,000,000 bushels. A "disastrous failure" would mean a crop below the food and seed requirements of the country. By the most reliable figures now given to the public the crop is 70,000,000 bushels above the needs of the country, leaving a grand total for export. It would seem that a prophet, who is receiving really "reliable" information, and who is capable of drawing "sound conclusions," ought to get somewhere within a hundred millions of bushels in his estimate of the wheat crop. Such is prophecy!

The Canton Cabinet Filing Case Company, Canton, Ohio,

MANUFACTURERS OF



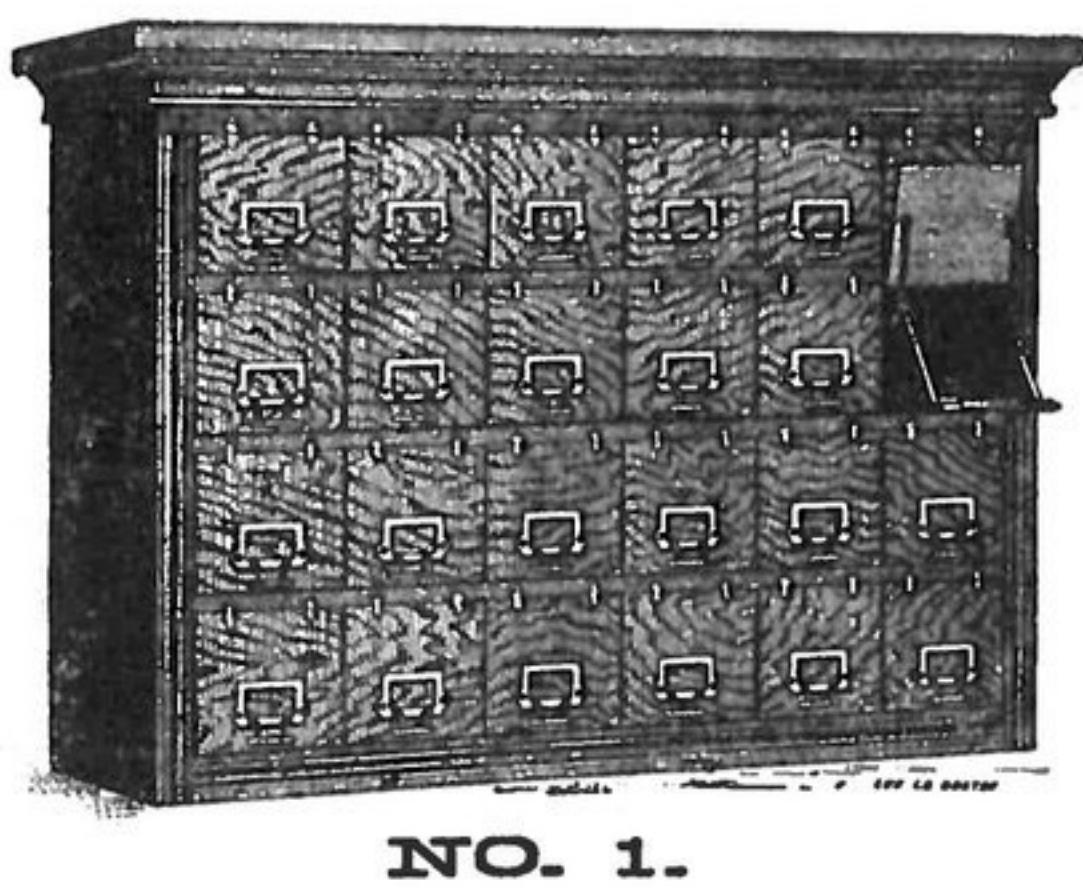
The New Buckeye Document Case & Letter File; Also All Kinds Office Furniture

N^o. 8 Represents one side of one of our Revolving Cabinet Letter Files and Document Cases Combined. It contains 80 Document Drawers and 8 Letter File Drawers. In filing letters we use first VOWEL of name on front of drawer, and LETTER FOLLOWING first VOWEL on Index Sheet within drawer. We also make more exhaustive systems which contain from 6 to 100 or more Filing Drawers.

N^o. 1 Represents one of our small Document Cabinets, for use on desks or brackets. Action of drawer can be seen in the cut. When front is raised inner drawer comes forward, exposing contents of drawer for inspection.

Our Cabinet Files are Considered to be the Most Convenient of Any in the Market. They are Compact, Simple, Complete, Durable and Ornamental.

SEND FOR PRICE LIST AND CATALOGUE.



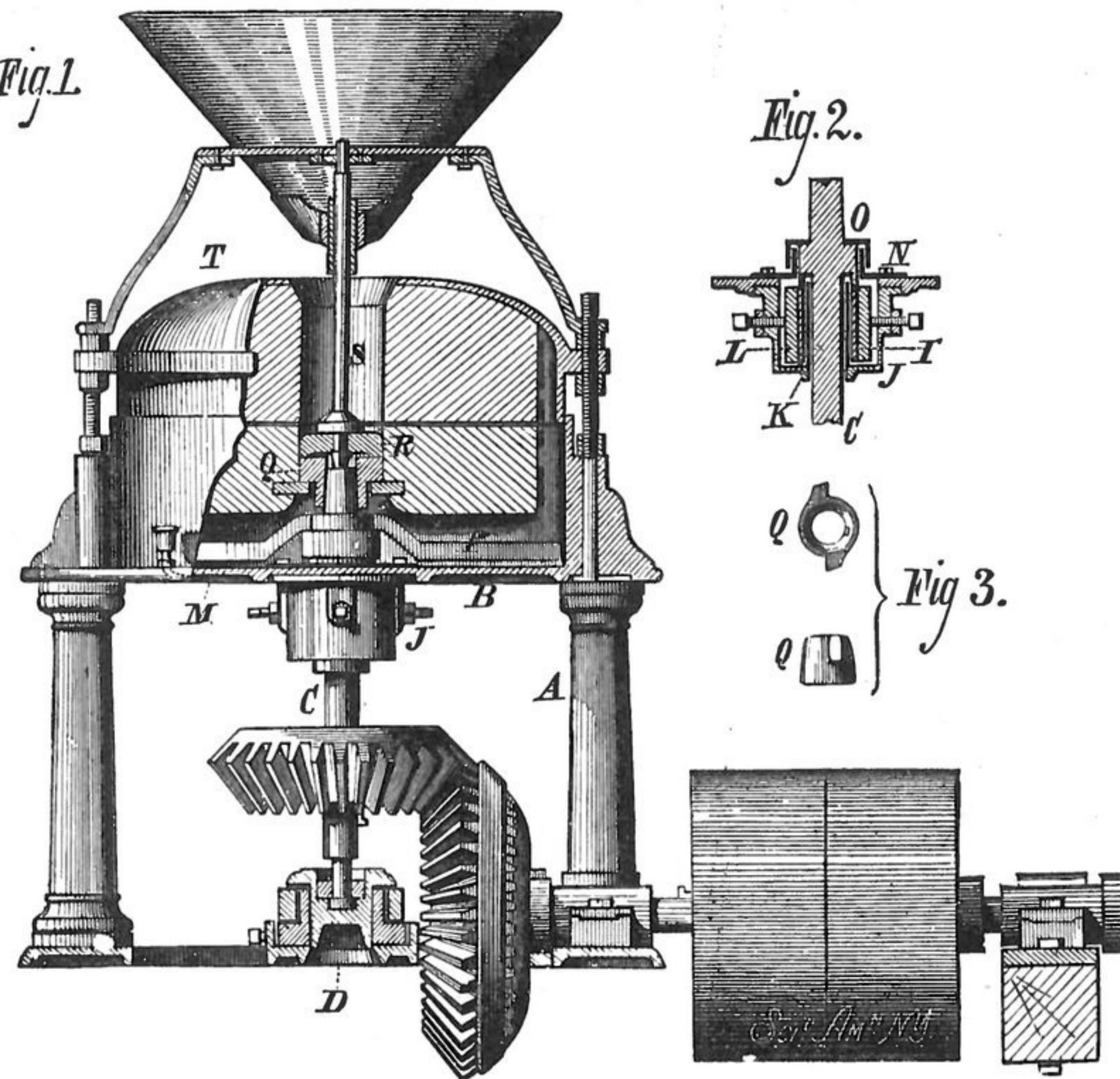
NO. 1.

MUNSON'S PORTABLE MILLS

With all of the Latest Improvements. Indorsed by the Best Mechanical Experts and Engineers. Every mill warranted; Every mill fully inspected: Every mill placed on its merits; Satisfaction guaranteed. Thousands in use; Best of references given.

IN USE BY THE LARGEST CORN GRINDERS IN THE WORLD.

MUNSON'S PATENT SPINDLE.
IMPROVED BUSH AND COLLAR,
CURBS, SILENT FEEDERS, ETC., ETC.



DOUBLE GEARED WITH COUNTER-SHAFT,
Tight and Loose Pulleys,
BEVEL SHELL WHEEL & PINION.
Write Us for Prices and Discounts

Munson Brothers, Utica, N. Y.

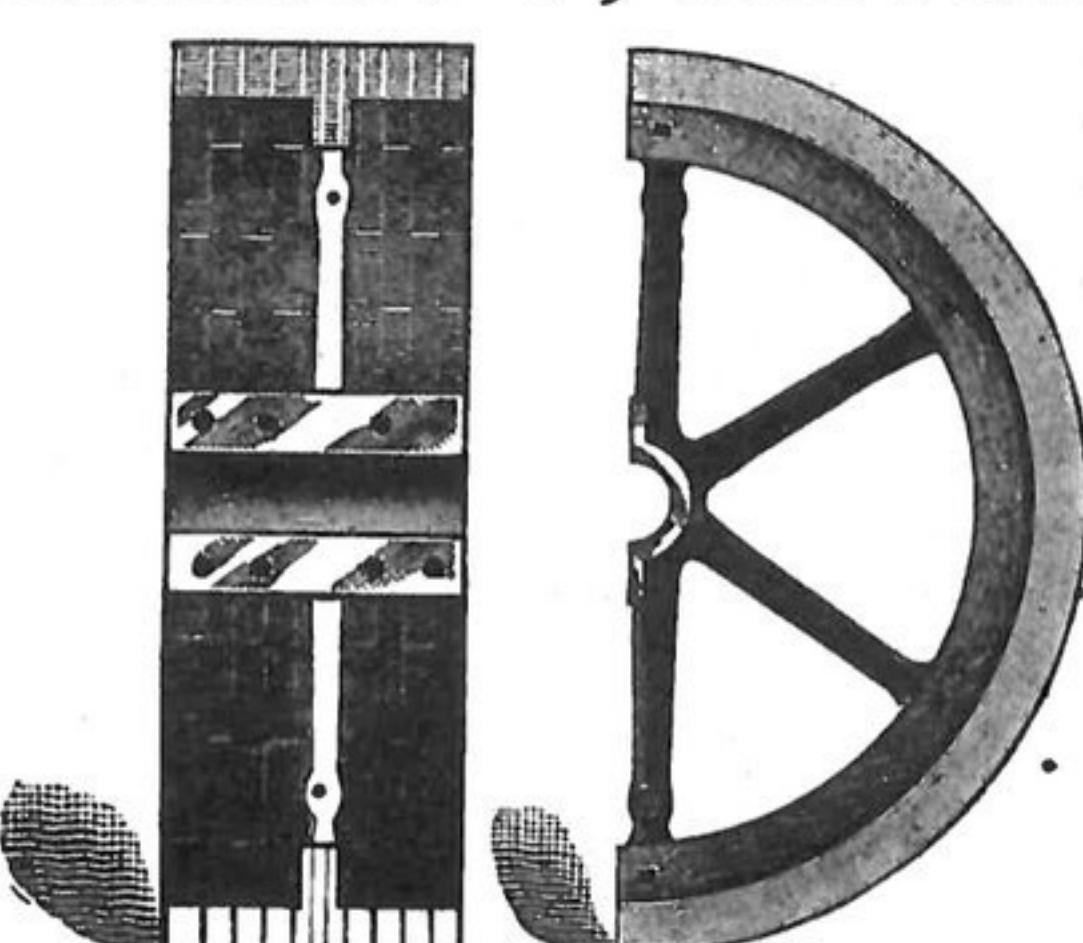
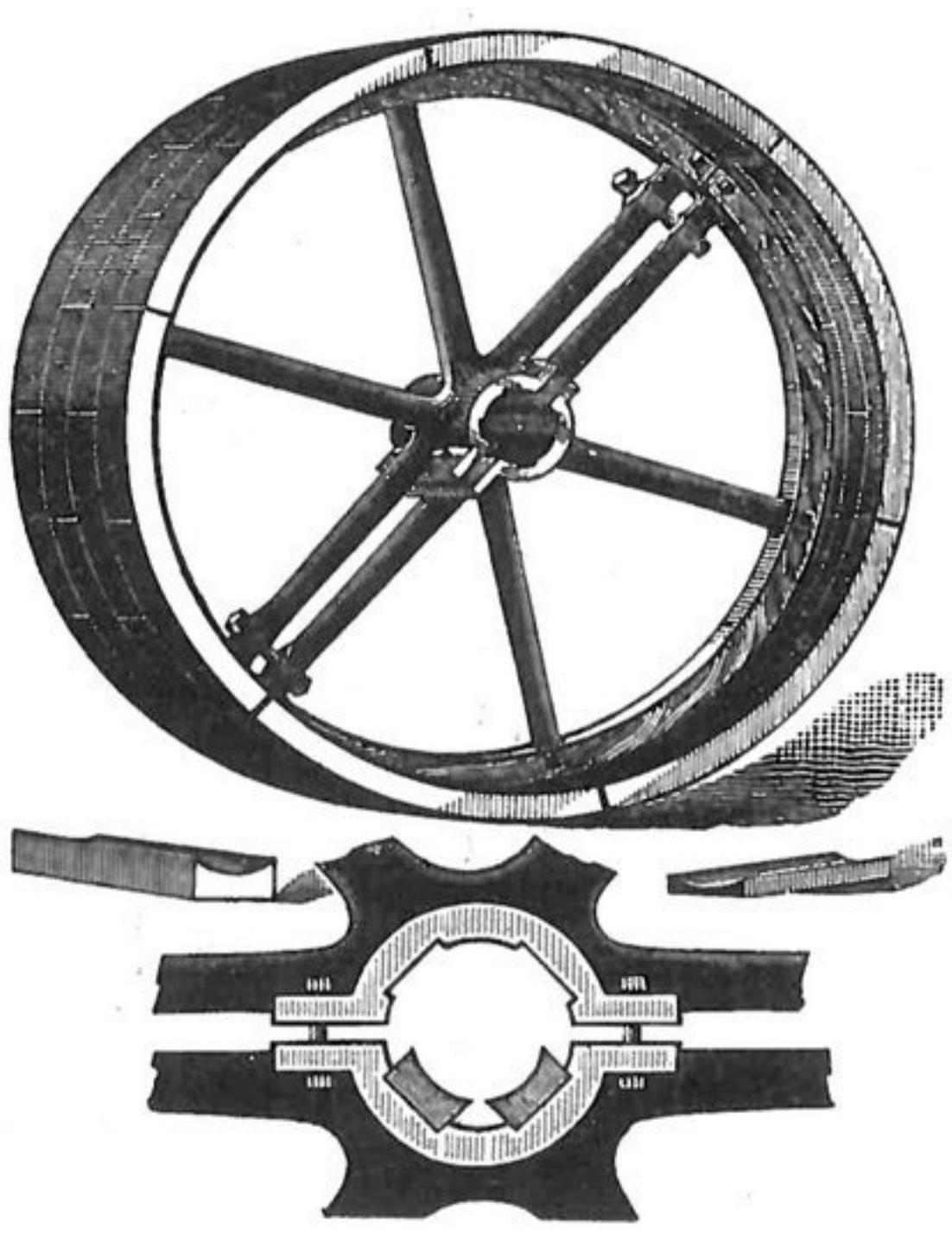
C. H. BIRD & CO., KALAMAZOO, MICH.

MANUFACTURERS OF PATENT

Wood Split Pulleys

WOOD RIM WITH IRON ARMS.

The Best Pulley on Earth!



Is very easily and quickly adjusted to Shaft. Has Patent Iron Bushings Interchangeable, to Fit Different Diameters of Shafts. Has FOUR or SIX Bearings on Shaft. This fastening never slips. Every Pulley strongly built and perfectly balanced.

SEND FOR CATALOGUE AND PRICE LIST.

MILLING WORLD

AND
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY. OFFICES: { Corner Pearl and Seneca Streets,
Over Bank of Attica.
McFAUL & NOLAN, - - - PROPRIETORS.
THOMAS MC FAUL. JAMES NOLAN.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; remit by Postal Order, Registered Letter, or New York Exchange. Currency in unregistered letter at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Rates for ordinary advertising made known on application.

Advertisements of Mills for Sale or to Rent; Partners, Help or Situation Wanted, or of a similar character One cent per word each insertion, or where four consecutive insertions are ordered at once, the charge will be Three cents per word. No advertisement taken for less than 25 cents. Cash must accompany all orders for advertisements of this class.

Orders for new advertisements should reach this office on Friday morning, to insure immediate insertion. Changes for current advertisements should be sent so as to reach this office on Saturday morning.

EDITOR'S ANNOUNCEMENTS.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trades.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with a millfurnishing house and aims to represent the trade without prejudice, fear or favor.

Address all communications

THE MILLING WORLD, BUFFALO, N. Y.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1 cent for each additional word. Cash with order. Four consecutive insertions will be given for the price of three.

SITUATION WANTED.

A steady miller would like to have a position as assistant in a roller or buhr mill. Has had 5 years experience in buhr milling. Address, HARRY H. VON NEIDA. Laurelton, Pa. 20

SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1 cent per word, for one insertion, or 3 cents per word for four insertions. No order taken for less than 25 cents for one insertion, or 50 cents for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

FOR SALE AT A BARGAIN.

A good 100-barrel roller mill in Western New York. Good reasons for selling. For particulars address, "E," care of MILLING WORLD, Buffalo, N. Y. 2226

WANTED.

Wanted to sell one-half or whole interest in a first-class paying grist and saw-mill, or would rent same. Every thing in first-class order. For particulars address, "P," care of THE MILLING WORLD, Buffalo, N. Y. 1619

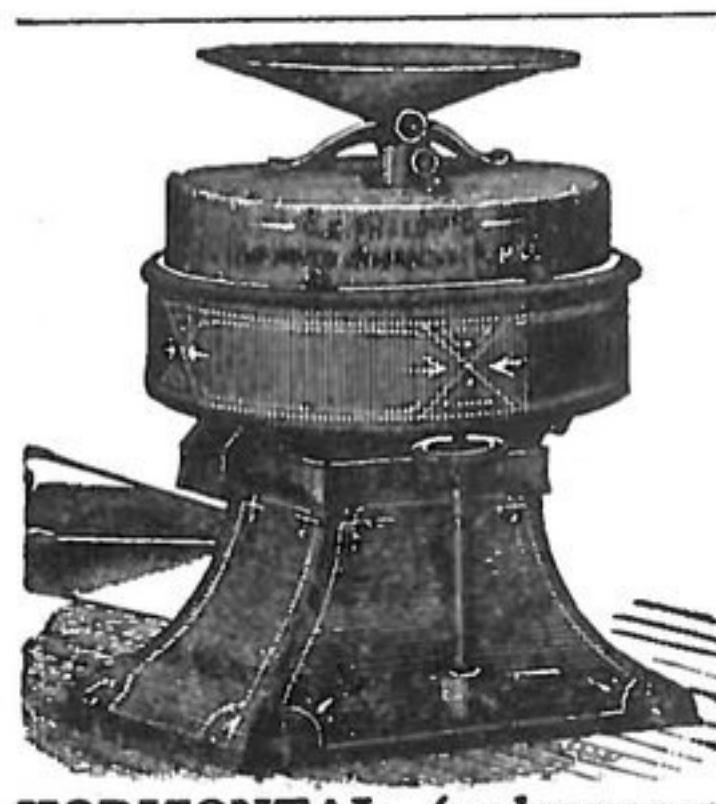
SAFE BUSINESS INVESTMENT.

A party owning flouring mill, with modern most approved machinery, doing large, profitable, local and merchant business, well established, located in growing city, population 12,000, Western New York, desires to associate more active capital. Correspondence solicited. Address, BOX 787, Waukesha, Wis. 18tf

FOR SALE.

10 Single Sets 9x80 Stevens Rolls.
2 Single Sets 7x12 Ferriers Rolls.
2 Centrifugal Reels.
2 No. 8 Niagara Bran Dusters.
2 No. 8 Prinz Dust Collectors.
1 No. 4 Hunter Purifier.
1 No. 6 Garden City Purifier.
1 No. 1 Pyne Purifier.
1 No. 8 Richmond Brush Machine.
1 No. 2 Silver Creek Scourer.
1 No. 00 Becker Brush Machine, over 50 Run Millstones all sizes, all complete.

Above Machines are in first-class condition and practically as good as new. Address J. B. DUTTON, 115 E. Fort Street, Detroit. 18tf



If you are desirous of obtaining the best Mill or Cob Crusher, send for our catalogue and be convinced that our's fill the bill. Can not fail to please you. They are guaranteed to prove as represented.

C. C. PHILLIPS,
OFFICE, 20 SOUTH BROAD STREET,
PHILADELPHIA, PA.

MILL MACHINERY FOR SALE.

One 24-Inch Portable Mill, wood frame, capacity 15 to 20 bushels per hour; new, best make.

One 20-Inch Portable Mill, iron frame, capacity 12 to 16 bushels per hour; new, best make.

One No. 0 Standard Combined Separator, Smutter and Brush Machine; new, best make.

One 18-Inch Vertical Portable Mill, French Buhr Stone, hung on horizontal shaft; capacity 25 to 40 bushels per hour; new, best make.

One 14-Inch Vertical Feed Mill; best make, new, a bargain.

One No. 6 Dustless Separator; new, a bargain.

Two No. 4 Scientific Grinding Mills, capacity 40 to 50 bushels per hour; new.

A Lot of Elevator Buckets, brand new, best make, any size desired, very cheap.

One No. 1 Full Rigged Combined Dustless Separator; new, a bargain.

Four Corn Cob Crushers, right or left hand, driven from above or below, best make; capacity 40 to 60 bushels per hour.

For particulars address, FRANK SMITH, care of THE MILLING WORLD, Buffalo, N. Y. 5tf

AGENTS WANTED.

Active resident agents wanted in every locality, rare offer, not whole time required, money made easily. Samples, &c., free. Send reference with application. RELIANCE OIL & GREASE CO., Cleveland, O. 1923

NOTWITHSTANDING the "shut-down" of which so much has been heard and said and written during the past month, there seems to be a large production of flour in the principal milling centers. There appears, also, to be a steady supply in the markets for all demands. Where is the screw loose? Why is it loose?

BREADSTUFF exports from the United States in December, 1888, amounted to \$10,155,796, against \$10,370,594 in December, 1887. During the six months ending December 31, 1888, the total was \$62,219,658, against \$73,822,658 in the last six months of 1887. The total for the year 1888 was \$112,615,876, against \$158,528,053 in the year 1887. The wheat grain exports in December, 1888, were 3,919,692 bushels, worth \$3,678,474, against 4,226,376 bushels, worth \$3,619,416 in December, 1887. For the last six months of 1888 the wheat grain exports were 28,220,770 bushels, worth \$25,917,205, against 44,679,666 bushels, worth \$38,328,995 for the last six months of 1887. The wheat flour exports in December, 1888, were 698,613 barrels, worth \$3,548,882, against 1,171,365 barrels, worth \$5,407,162 for December, 1887. For the last six months of 1888 the flour exports were 4,843,790 barrels, worth \$23,292,557, against 6,235,926 barrels, worth \$28,419,244 in the last six months of 1887. The other lines showed considerable variations. The barley exports for the last six months of 1888 amounted to \$753,592, against \$112,811 in 1887; the corn exports amounted to \$11,488,533, against \$6,382,341; corn-meal \$481,111, against \$417,179; oats \$148,038, against \$68,754; oatmeal \$82,938, against \$81,525; rye \$55,684, against \$11,809. In value the exports of December, 1888, were only \$214,798 below those of December, 1887; in the last six months of 1888 the value was \$11,603,000 less than in 1887; and in 1888 the value was \$45,912,177 less than in 1887. The showing is bad enough, and it is easily accounted for in the short wheat crop of 1888 in the United States and in the foolish bulling of that crop to a notch that forbade free exportation. The Yankee damphool learns slowly, and it may require another season of first-class fool-work with the wheat crop to convince the millers, the farmers, the grain-dealers and the flour-dealers of the United States, who deal in actual wheat, that it is a foolish proceeding to allow their grain and flour to go into the clutches of the speculators. Misrepresentation on a gigantic scale was practiced during the year 1888, in connection with the wheat crop, and it is not surprising that the country has well up towards 100,000,000 bushels of wheat on hand that should have gone and would have gone into consumption under ordinary conditions. Up to date the only interested persons who have been benefited by the peculiar manipulation of the 1888 crop seem to be northwestern farmers, who received high prices for their wheat, and a few gamblers, who made big sums of money on bulges and boosts and other stock tricks in the speculative markets. On the whole, the country is poorer by millions than it would be, had the markets been left to adjust themselves according to the relations of demand and supply instead of being adjusted to fictitious relations created by the crazy gamblers.

THE DETERIORATION OF STEAM BOILERS.

"The Locomotive."

Deterioration of steam-boilers was the subject of a lecture recently delivered in Sibley College, Cornell University, by Mr. J. M. Allen, of Hartford, Conn., an abstract from which is given below: When a boiler is completed and set to work, destructive forces more or less severe become active, and they

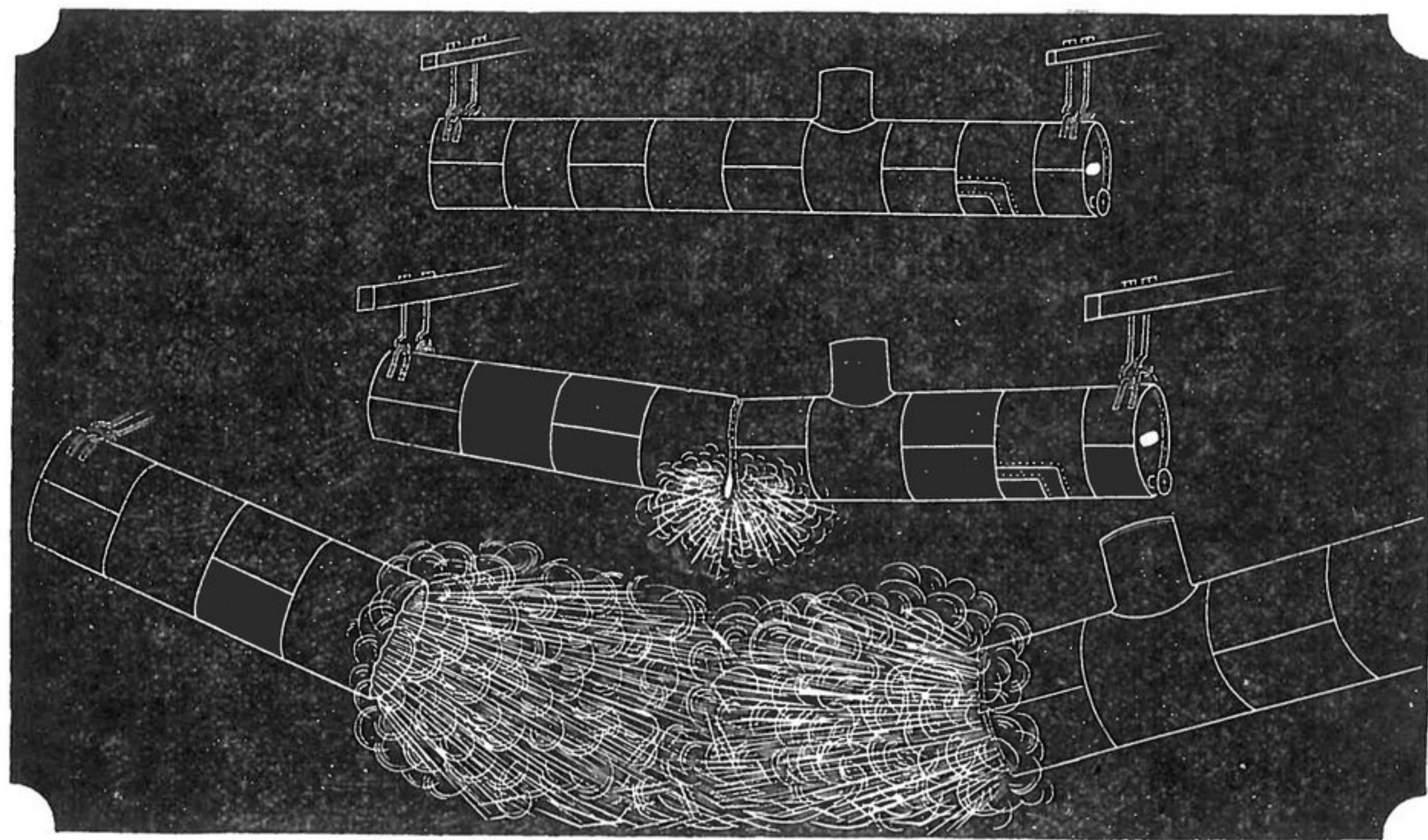


FIG. 1.

must be carefully watched, or the working age of the boiler will be materially shortened. The forces may be mechanical or chemical, or both. The mechanical forces are those usually arising from bad design or workmanship in construction, with the exercise of little judgment in the matter of setting. A boiler should be so designed, constructed and supported that under the conditions of use the strains will be as uniformly distributed as the conditions will allow. In externally fired boilers it is well known that the bottom or fire-sheets are more expanded than the top sheets. Hence it becomes necessary to have such arrangements made in the setting or support that the boiler shall rest easy and have opportunity to adjust itself to these conditions. In

strain, but when well constructed and properly set they have stood the test for many years. Usually these long boilers, from 40 to 60 feet in length, are used in iron-works, and are heated by the waste gases from the smelting furnaces. The gas enters the boiler furnace under more or less pressure, and when ignited will present one continuous sheet of flame from the furnace to the rear end of the boiler. In order

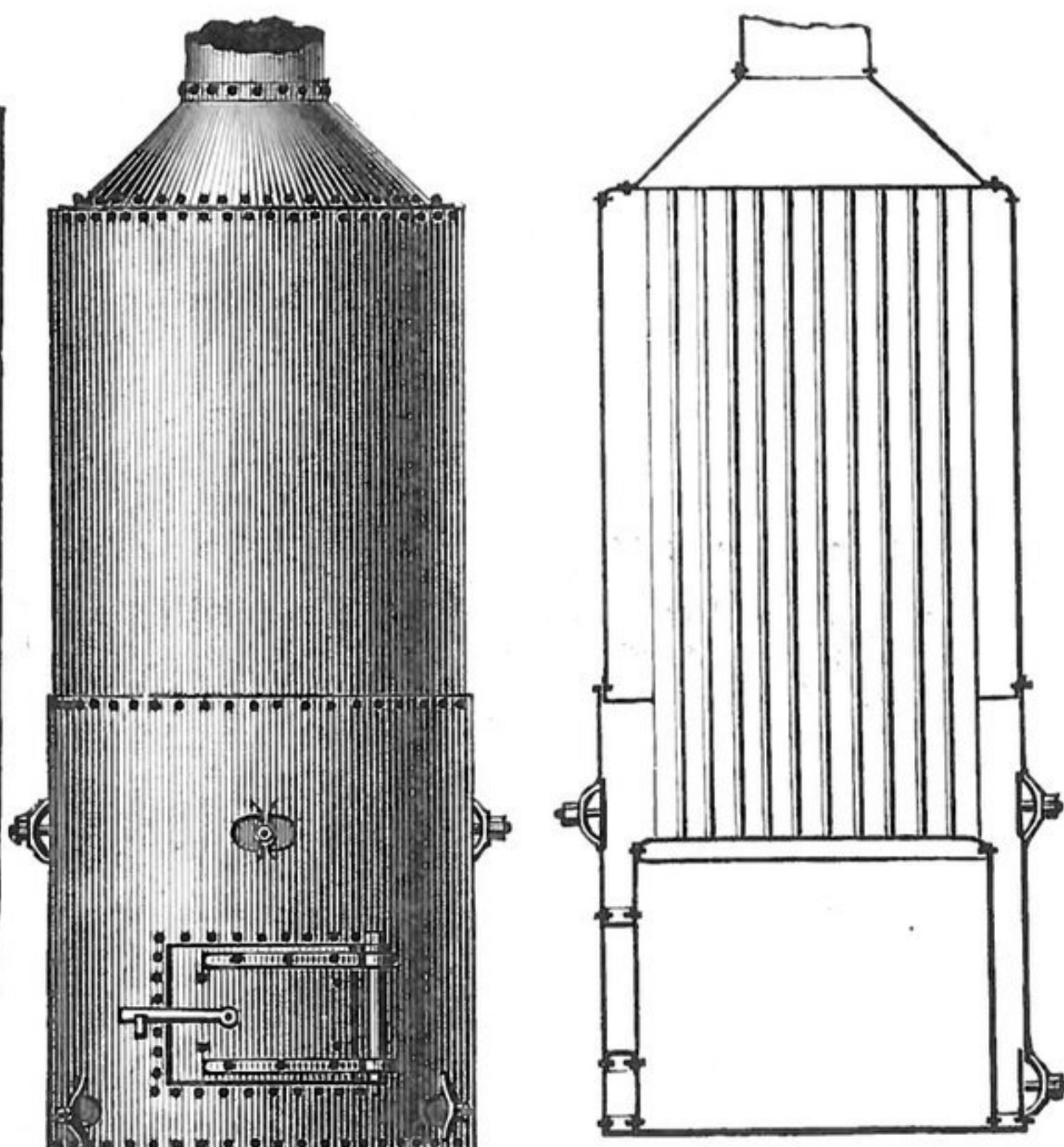


FIG. 3.—AS THEY SHOULD BE BUILT.

fully to utilize these gases, the long boilers are used. It is a question whether shorter boilers of a different type may not be used with safety and equal economy. Another form of cylinder boiler from 28 to 30 feet long is used in connection with reheating furnaces in iron-works, the gases being utilized for fuel. These boilers are often supported by rest-

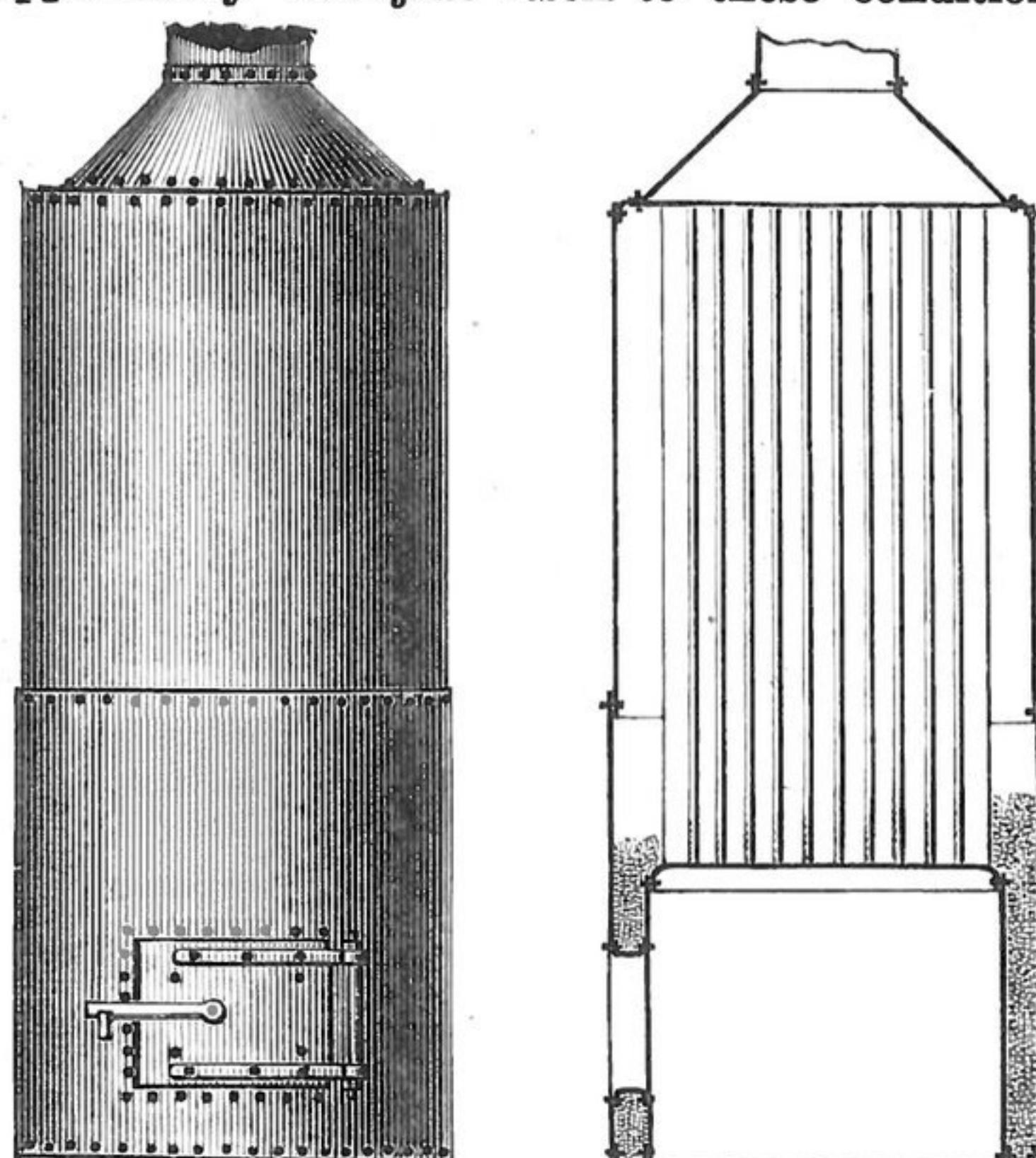


FIG. 2.—AS BOILERS ARE OFTEN BUILT.

long cylinder boilers this strain often becomes quite severe, and if the boiler is tightly bound up in brick-work, fractures are very liable to occur. To compensate for this, various plans for supporting long boilers have been devised. In some cases the brackets or beams supporting the boilers have rested on volute springs, in other cases equalizing beams or bars are used. In some cases quite elaborate apparatus has been devised. The point to be attained is so to support the boiler that the load will be properly distributed under the changes of form to which the boiler may be liable under heat. Were it not for the elasticity of the metal, these long boilers could not adjust themselves to this severe

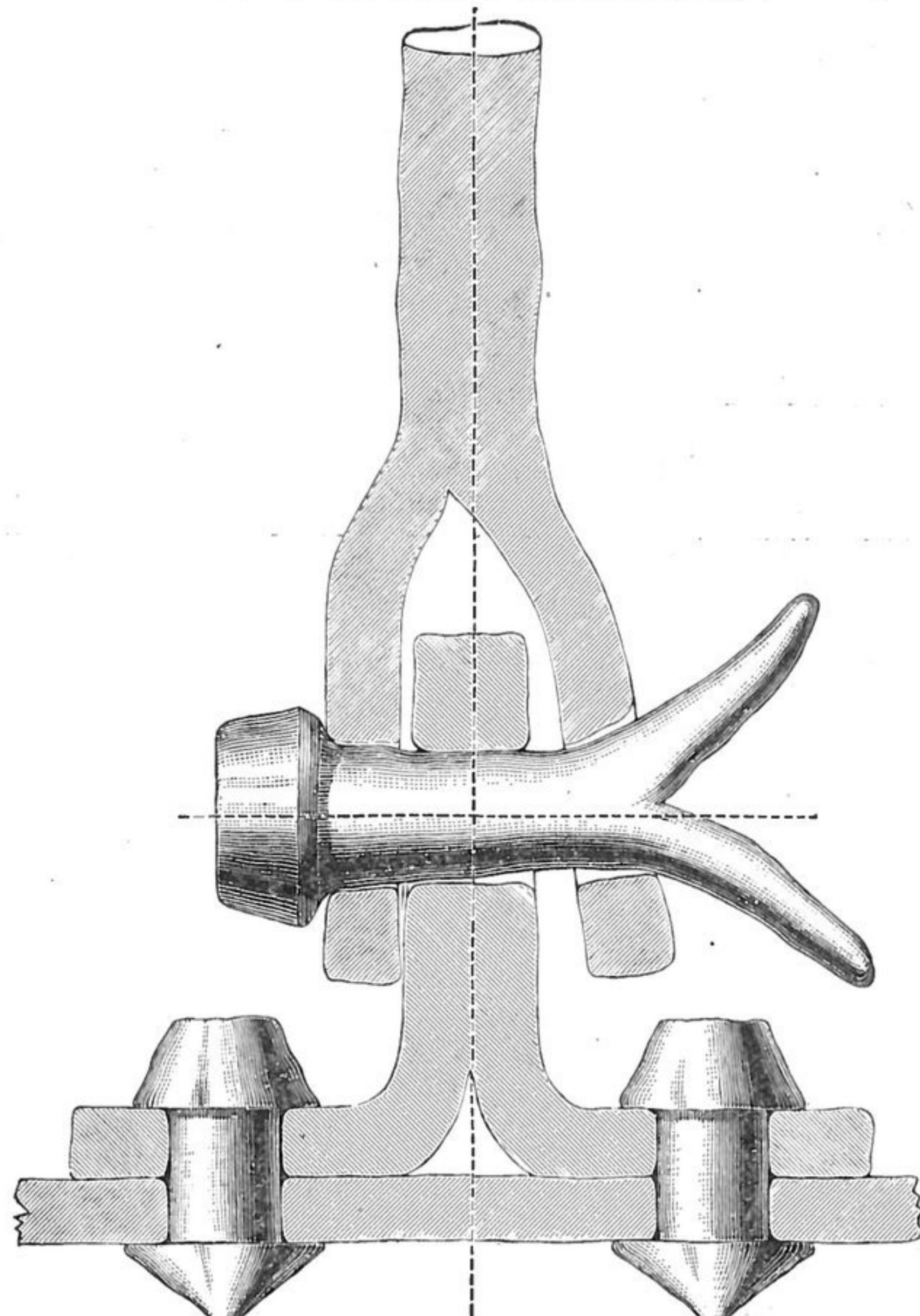


FIG. 4.—SHOWS A BRACE FASTENING TO HEAD OF BOILER AS THEY ARE SOMETIMES MADE. (This is no exaggeration.)

ing simply on walls at each end. When the metal is being run off, the furnace doors are thrown wide open and a current of cold air is allowed to flow into the furnace and along the bottom of the boiler. The walls are very hot, and the temperature of the steam and water in the boiler is that due to the pressure. The sudden cooling of the fire-sheets causes

contraction, and a severe strain is brought, especially on the girth seams. These not unfrequently crack from rivet-hole to rivet-hole, and in a number of cases I have known the boiler to break into two parts, each part flying off in opposite directions, Fig. 1.

A current of cold air should never be allowed to strike for any length of time the fire-sheets of a hot boiler, and such boilers should always have rods, not less than one-inch sectional area, running from head to head, sufficient in number to hold the boiler together under such circumstances. With this provision for safety, if a leak was noticed at any girth seam, the boiler could be put out of use and the extent of the fracture ascertained and suitable repairs made, thus preventing what otherwise might cause a serious accident. Internally fired and fire-box boilers have their weak points as well. There are narrow passages for the collection of sediment and formation of scale, and in these narrow passages the circulation is very imperfect, and wasting and corrosion are very liable to take place. I will say that this type of boiler is very much used, and with economical results. There is economy of space also, which is often an important consideration. But boilers with water-legs and narrow water passages should be frequently examined, so that the difficulty, if such exists, can be discovered and remedied before the progress of deterioration has gone to a

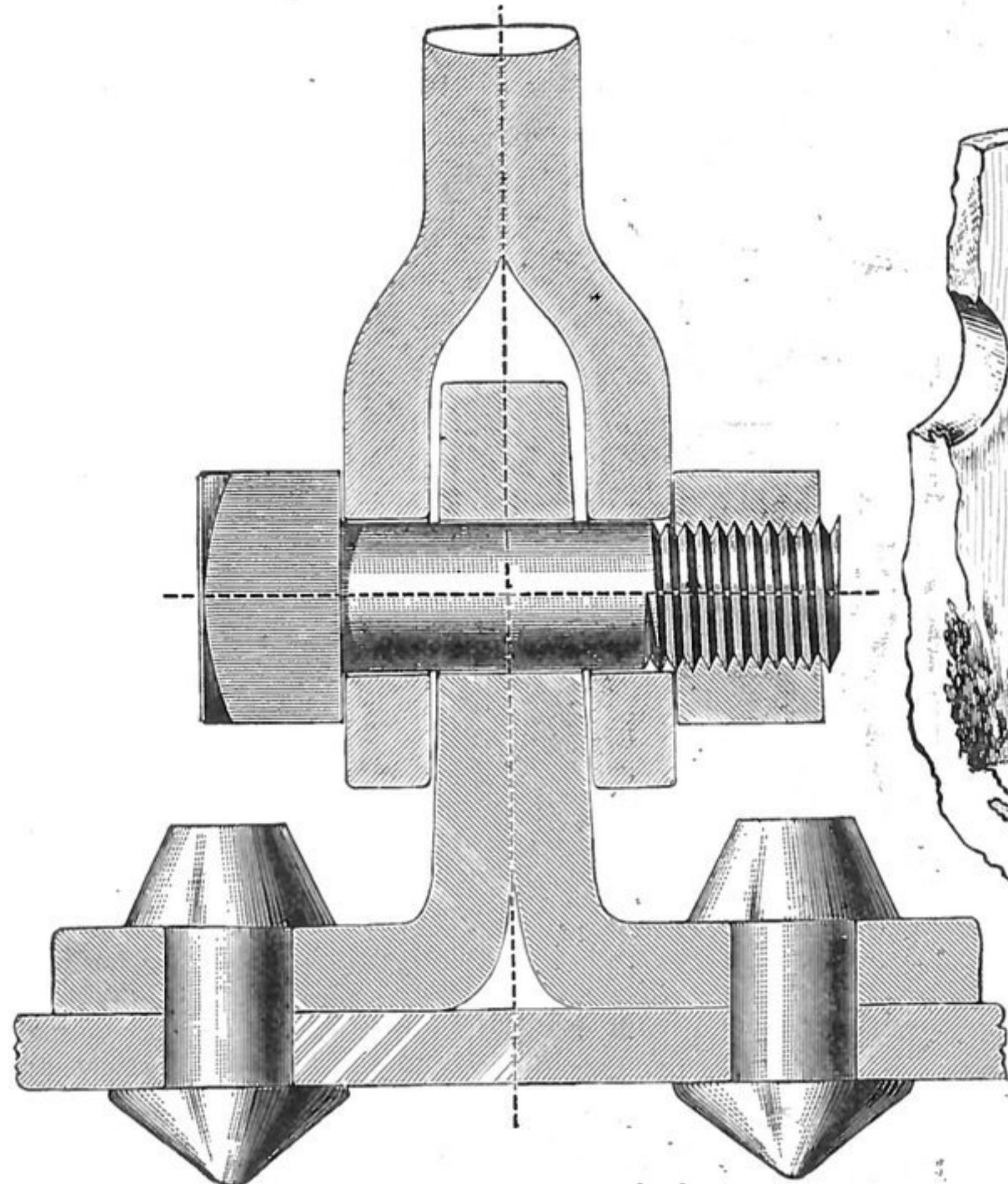


FIG. 5.—BRACE FASTENING AS IT SHOULD BE.

dangerous extent. Boilers with narrow water passages, whether vertical or of the horizontal type, should be supplied with a sufficient number of hand-holes to make the work of cleaning out sediment comparatively easy. The following illustrations (Figs. 2 and 3) will show how vertical boilers are often constructed, also how they should be constructed to overcome the difficulties mentioned.

Another important matter is good workmanship in construction. If a boiler is bunglingly put together there will be severe local strains that under the conditions of use will be greatly aggravated. If the parts of the boiler do not fit well and are brought into place by severe hammering and wrenching, what can we expect of such a boiler when put into use under a pressure of eighty or ninety pounds to the square inch? It will leak and give any amount of trouble to the user, and it will be fortunate if it does not burst or explode, carrying death and destruction in its flight. The "drift pin" seems to be one of the great evils in a boiler-shop, although few boiler-makers will admit that they use it, except to keep the plates in place while they are being riveted together. But I sometimes step into a boiler-shop, unknown and unannounced, and I have seen the cruel use of the drift-pin. Another potent cause of the deterioration of boilers is the water which is used, causing deposits of sediment and formation of scale, and often having corrosive tendencies.

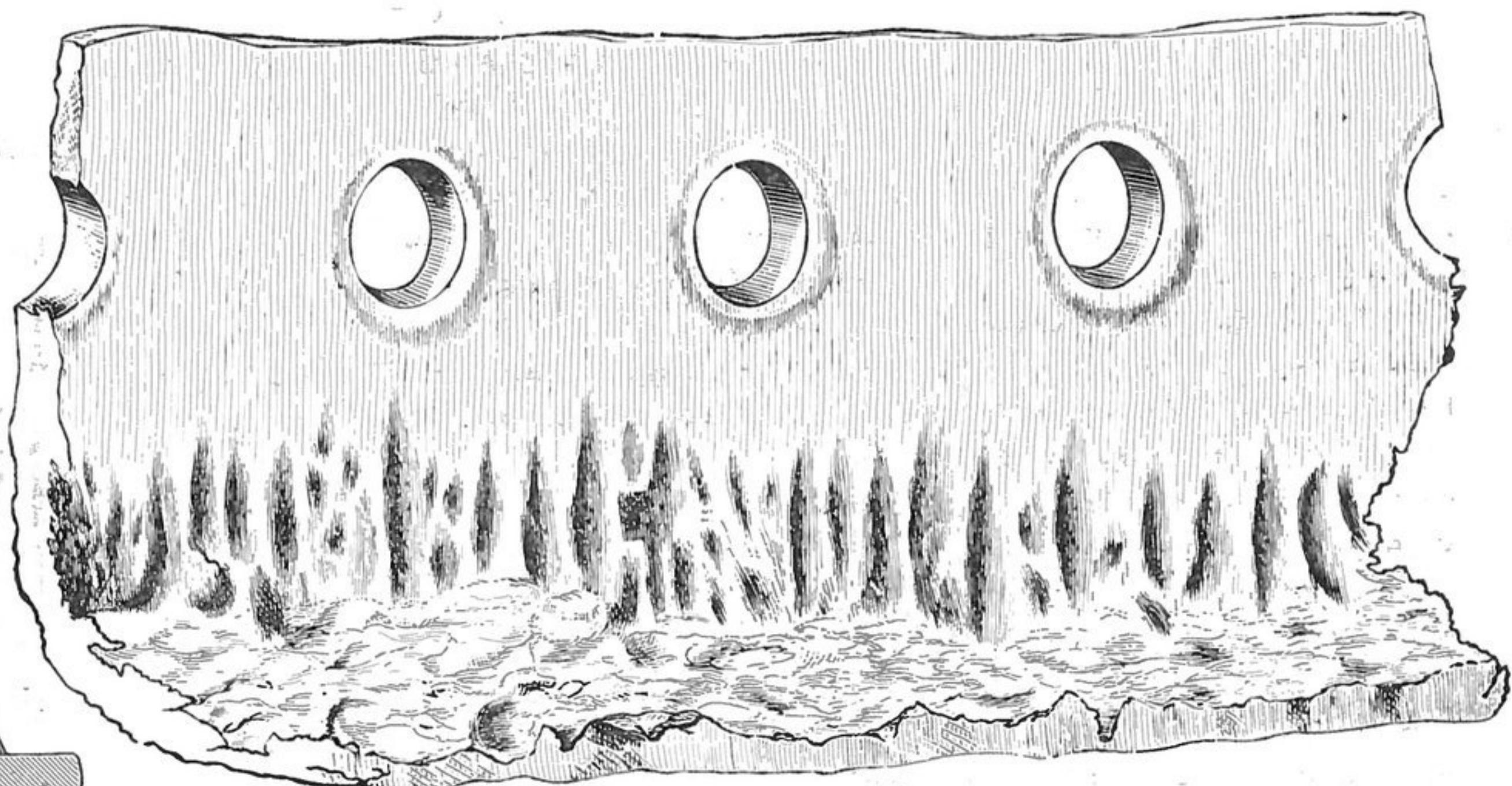


FIG. 6.—PART OF A HEAD OF A BOILER BADLY CORRODED AND PITTED BY WATER FROM A SWAMP.

are better able to decide what the remedy must be. If the impurity is mainly carbonate of lime or magnesia, it is usually thrown down in the form of a fine powder. Frequent blowing is necessary, that is, blow down two gauges of water two or three times a day. But in addition to this there should be a good pipe or coil heater, and the sediment from that should be blown out often. It sometimes occurs that the impurities do not readily settle on the bottom of the boilers, especially if the boilers are hard worked and circulation is rapid. In such cases a surface-blow is desirable and important, the object being to remove as far as possible the impurities from the water. To give you a correct impression of the character of some waters used in boilers, I copied the following our laboratory records: In spring water from Nashville, Tenn., we found in 100,000 parts, insoluble and sparingly soluble solids 17.6 parts, readily soluble solid matter 35.2, or a total of 52.8 parts, or 30.82 grains to a United States gallon. In another case in water from a well at a chemical works we found in 100,000 parts, insoluble and sparingly soluble solids 25.6, readily soluble solids 71.2, total 96.8 parts, or 56.52 grains in a United States gallon.

You will very naturally inquire, What do you advise to be done in these cases of bad water? It is often a very puzzling question. If carbonate or sulphate of lime predominate, a very good antidote is carbonate of soda. Especially is this good in case of carbonate of lime. It prevents it from readily forming a scale, and if attention is given to blowing and cleaning, the difficulty can be easily overcome.

We usually recommend from eight to ten pounds of soda-ash dissolved in warm water to be introduced into the boiler about once or twice a week. This can be done by putting a branch into the suction-pipe of the pump and connecting this branch by a hose to the pail or vessel containing the solution. In some cases we use one part, by weight, of catechu to two parts of soda-ash. Tannin works well in some cases, and a solution made from boiling the leaves of the eucalyptus tree has found much favor on the Pacific coast and is being introduced in this part of the country. There is no grand panacea that will cure all these maladies. We must know something about the case before we can remove the disturbing cause. It will be readily seen that if attention is not given to these cases, the result will be not only annoying, but dangerous. Hard scale will accumulate on the fire-plates of the boiler, resulting in overheating and greatly weakening the boiler. The question of the waste of fuel is also an important one, for steam can not be economically generated in a boiler where the plates are covered with scale. We all know that scale is a very slow conductor of heat, hence in addition to loss here the plates are worn way and become greatly weakened. The question of corrosion is a serious one in some cases and is difficult to manage. Water from swamp lands often has corrosive tendencies (Fig. 6), and in rivers and streams on which a number of manufactories are located, discharging their spent dyes and refuse, water becomes very much contaminated and gives serious trouble to the mills located down the stream. Our advice has always been for the parties to combine and lay a water main from the pond of the upper dam to the mill lowest down, sufficient capacity to supply them all with good water. Another difficulty which is often encountered and which at first seems paradoxical is corrosion or pitting from pure water. Corrosion in boilers in the absence of free mineral acids can proceed from three principal causes:

1. The purity of the water. Water is an almost universal solvent and dissolves most substances to some extent. In the absence of substances in solution to prevent that action, even pure water would attack iron and corrode it, but except in the case of distilled (condensed) water returned to a boiler with the return-pipe coming near the shell, this condition can hardly be said to exist, as even rain water contains from one to three parts per 100,000 of impurities.

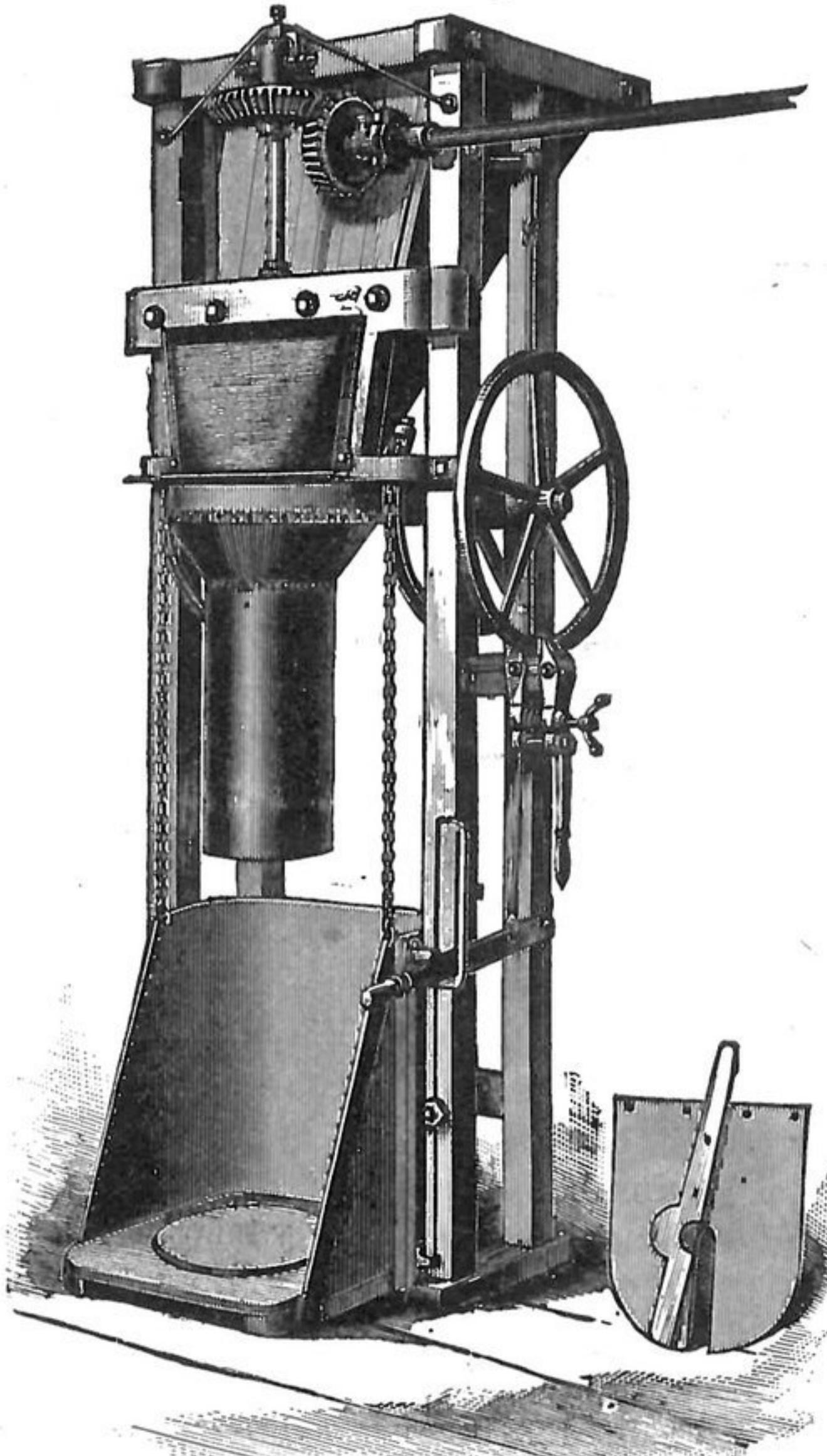
2. The presence of air and dissolved gases in the water. This is in all probability the most fruitful source of corrosion, except the acid decomposition of grease, oil, etc. Water, unless recently boiled, contains varying amounts of dissolved gases, which are expelled at boiling temperatures. It has the peculiarity of holding a larger proportion of oxygen in solution than air has, usually about 33 per cent. more in water free from oxidizable matter. This under proper conditions would combine with the iron, rusting it rapidly, and when oxidation had once begun, forming a rust spot, heat and moisture would rapidly continue the work. Water also contains varying and sometimes large amounts of carbonic acid gas. This by some authorities is equally injurious with the oxygen, but as when existing in large amounts it is almost invariably associated with lime and alkalies, which have been found to prevent corrosive action in practice, it is probable not especially harmful. Oxygen and nitric acid occur in rain water and newly fallen snow, and the purer and more aerated a water is, as for example rain water, snow water and water from uncultivated upland and quick slopes, the more dissolved oxygen it is likely to contain.

3. Substances in the water causing corrosion. A water containing more than ten parts per 100,000 of solid matter usually contains considerable lime as carbonates, some soda and potash salts, and is alkaline. Such a water is not likely to corrode a boiler. A water with only four or five parts of solid matter (though it may contain also considerable dissolved oxygen, etc.) may be almost if not quite neutral, or even slightly acid. This acidity may come from dissolved organic matter, which, if from fields or woody districts, the water is likely to carry in considerable amount. This woody extractive matter is easily decomposable, and some of the complex acids, so called humic, crenic, apoorenic, oxalic,

etc., present or formed under the action of decomposition, act very unfavorably on the iron of the boiler. This woody or especially peaty matter also contains tannic acid and gums in many cases and has been observed to varnish the inside of boilers in some places so as effectually to prevent corrosion where otherwise it would be expected. The presence of certain salts in solution has a very injurious effect on boilers, even in small amounts. Waters containing nitrates, and especially ammonia salts, as ammonia chloride, seem to be especially bad. Water exposed to the leaching from vaults is especially undesirable, even though a water strong in salt and alkalies from a common sewer might not be harmful to the boiler. The action of oil and tallow decomposing to oleic and margaric acid in the boiler, in the absence of alkalies, and especially with a coating of sulphate scale to prevent free circulation of the water at the corroding points, is well established. It occurs that a water at some seasons of the year making quite a scale is at others quite soft and charged with air and gases and partly dissolves that scale. This may go on indefinitely, until an unusually wet season, or a very clean or new boiler with the water quite pure, may suddenly develop injurious pitting from the absence of matter to counteract the effect.

THE ALLFREE PATENT FLOUR PACKER.

Among the many superior and indispensable machines put upon the market by that well-known house, the J. B. Allfree Company, of Indianapolis, Ind., is the Allfree patent flour-packer, a front view of which is given in the accompanying



ALLFREE'S PATENT FLOUR-PACKER.

engraving. The manufacturers say of this machine: "In offering this packer to the milling trade, we do so with the full knowledge of the competition it must meet and the requirements to which it must conform. Upon careful examination, however, the many decided improvements and general superiority over all others will be apparent. Constructed in a most thorough and substantial manner of the very best material, it is unsurpassed in fineness of finish, durability, simplicity, cleanliness, speed and ease of operation. The platform is enclosed on three sides so that no flour that may waste from the tube can get on the floor. It is counter-poised by a long coiled spring, which can not vary from whatever tension at which it may be set, and owing to its length and slight movement will not break or give out, but can be quickly and exactly adjusted to suit the various

weights of different-size sacks and barrels. The friction apparatus is an entirely new and improved device and is free from the effects of heat, cold, dry or damp atmosphere. It can be instantly adjusted and when set is unvarying. No weights or other objectionable devices are used. The platform with the empty sack or barrel is instantly raised by the spring upon releasing the friction-brake. The driving-shaft is provided with a long ball-and-socket bearing, and the whole throw-out mechanism is so constructed that the gears are invariably thrown out at the proper moment. A greatly improved tube-holder and slide for cutting off the flour when changing the tube is used, preventing leakage, the opening being closed by an auxiliary shutter. In short, we believe that we have overcome most of the defects in packers heretofore built, without introducing new ones, and we are willing that this be proven by competitive tests. The packer will run with the sun unless otherwise ordered, but is built either right or left handed and can be changed in a few minutes. Distance from floor to center of driving shaft 7 feet 4 $\frac{1}{2}$ inches; height of frame 8 feet 2 inches; size on floor 2 feet 8 inches by one foot 6 inches; square of top of funnel 2 feet $\frac{1}{2}$ inch by 1 foot 9 inches."

RUST AND FROST AND WHEAT.

Professor Lugger, botanist, has made a report to the governor of Minnesota covering his observations in an investigation of the damage to the wheat crop of 1888. He says in some counties the rust was a greater cause of damage than frost. With respect to Polk county, the farmers had to sow their wheat at three different times, about one week apart, because they were interrupted in their work by heavy rains. The crops from the first two sowings were a total loss. The plants were weakened by too much moisture followed by intense heat, both favoring the growth of parasitic rust. The plants produced from the latest sowing promised well, and the berries were to all appearances well filled, although the leaves and stems were badly covered with rust. The frost of August 14 to 16 killed the previous very weak plants; the berries, although plump, would, when squeezed, show no milk, but water. When the plants were cut and put in stacks a very strong acid odor would soon be produced in their vicinity, indicating that the berries underwent a fermentation. Such berries shrank up to almost nothing and form now a very large percentage of the entire crop. Riper berries containing less water were not killed by the frost, although they also have a very shrunken and blistered appearance and are unfit for both milling and feeding purposes, as nearly the whole amount of gluten is abstracted by the rust or decomposed by the frost. Hogs fed with such food will not fatten and in reality do not eat the grains except when forced to do so by hunger. The injury to the crops was rather uniform. Plants upon certain kinds of soil fared somewhat better, and such exceptions can be readily explained. Wheat growing upon a more sandy soil, and consequently upon ground better drained and free from excessive moisture, ripened its berries in time. Naturally such plants were also less affected by the rust and not so much weakened by this parasite as others growing upon rich and moist soil. Wherever air had free access to the individual plants, the moisture could evaporate much more rapidly, and rust did no great injury. That was the case upon sandy soil and along the edges of fields. But wherever there was a rank growth, shading the rich soil, evaporation was slow and the rust had full sway. Polk was among the worst counties, but several showed similar conditions though with less damaging results.

THE SWEETEST OF SWEETEST THINGS.

Saccharine is a white, partly uncrystallizable powder, odorless, with unusually sweet taste, which can easily be detected in very weak solutions, 1-50,000. Heated in a close tube it becomes brown and gives off vapors resembling those of hydrocyanic acid. When burnt it leaves a hardly appreciable residue. It is soluble in 400 parts of cold and 28 parts of boiling water, the solutions having an acid reaction in 30 parts of alcohol, and it is almost insoluble in ether. It

combines with the caustic alkalies. The solution neutralized with an alkali is colored yellowish brown with ferric chloride; the precipitate with hydrochloric acid yields saccharine again. Heated with excess of sodium carbonate, the saccharine carbonizes, emitting vapors of benzole; the residue dissolved in water, filtered, the filtrate supersaturated with nitric acid, separates upon addition of barium nitrate a white precipitate; 0.18 grammes of saccharine in 50 cubic-centimeters of water should wholly dissolve upon addition of 1 cubic-centimeter of normal potassa solution, and the reaction should be neutral; the solution with a few more cubic-centimeters of potassa solution, brought to boiling, should not become colored. With sulphuric acid the color must not change, but if the mixture is kept at the boiling-point for ten minutes a brown color ensues, but not a black one. Saccharine upon a filter, if treated with ether and the filtrate diluted with water, should give no precipitate with chloride of iron, nor a violet coloration. In reference to the discovery of saccharine Dr. Fahlberg, the discoverer, says: "Well, it was partly by accident and partly by study. I had worked a long time upon the compound radicals and substitution products of coal-tar and had made a number of scientific discoveries that are, so far as I know, of no commercial value. One evening I was so interested in my laboratory that I forgot about supper until quite late and then rushed off for a meal without stopping to wash my hands. I sat down, broke a piece of bread and put it to my lips. It tasted unspeakably sweet. I did not ask why it was so, probably because I thought it was some cake or sweetmeat. I rinsed my mouth with water and dried my moustache with my napkin when, to my surprise, the napkin tasted sweeter than the bread. Then I was puzzled. I again raised my goblet and, as fortune would have it, applied my mouth where my fingers had touched it before. The water seemed syrup. It flashed upon me that I was the cause of the singular universal sweetness, and I accordingly tasted the end of my thumb and found that it surpassed any confectionery I had ever eaten. I saw the whole thing at a glance. I had discovered or made some coal-tar substance which out-sugared sugar. I dropped my dinner and ran back to the laboratory. There, in my excitement, I tasted the contents of every beaker and evaporating dish on the table. Luckily for me, none contained any corrosive or poisonous liquid. One of them contained an impure solution of saccharine. On this I worked then for weeks and months until I had determined its chemical composition, its characteristics and reactions and the best modes of making it scientifically and commercially."

MINNEAPOLIS does not seem to be "restricting output" so freely as other milling towns. But, then, Minneapolis is a law unto herself in milling matters. Who can kick against Minneapolis?

SPECIAL NOTICES.

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO..

Columbus, Ohio.

Office and Factory, 5th Street, north of Naughton.

TOLEDO MILL PICKS AND STONE TOOL MFG. CO.

Manufacturer

and Dresser of

MILL PICKS.

Made of the best double-refined English cast steel. All work guaranteed. For terms and warranty, address, GEO. W. HEARTLEY, No. 297 St. Clair Street, Toledo, Ohio. Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

ALSO MANUFACTURERS OF

Shafting, Pulleys, Hangers, Coupling, Machine and Jobbing, Etc., Etc.



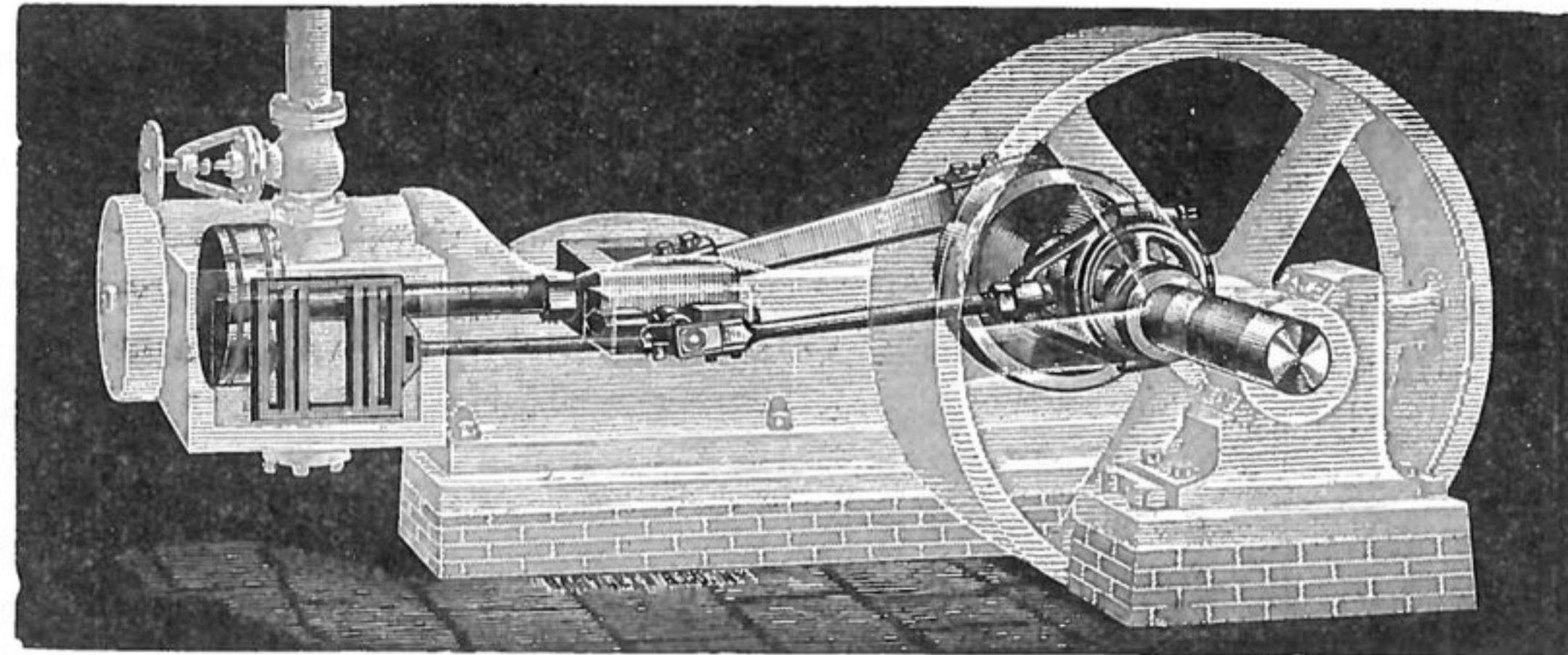
To PREVENT CORROSION IN BOILERS.—An English electrician has invented a material, which he calls alterion, for the prevention of corrosion in boilers. The interior is coated with this, and currents of electricity are passed through the boiler and from time to time reversed. The formation of the scale is prevented by a layer of hydrogen gas, which is deposited upon the inner surface of the boiler. The reversed currents re-form the hydrogen into pure water, a thin layer of pure water being thus kept all around the boiler.

GENERAL NOTES.

IN Japan the wages of carpenters are from 30 to 45 cents a day; wood carvers 35 to 53 cents; paper hangers 23 to 45 cents; stone cutters 45 to 53 cents; blacksmiths 23 to 38 cents; gardeners 19 to 38 cents; day laborers 15 to 23 cents. The workingman pays 40 cents per month rent for a house of one room, \$2.25 month for food and \$3.75 year for clothes.

THE chemists of the New York experiment station report results of examinations of the nutritive value of grain long kept. It was found that the digestibility of wheat and bran diminished to a considerable extent, and there appeared reasons for believing that the fats are less digestible in the old grain than in the fresh. The amount of fats soluble in either is remarkably less in grains 18 months old than in those but a short time from harvesting and freshly ground.

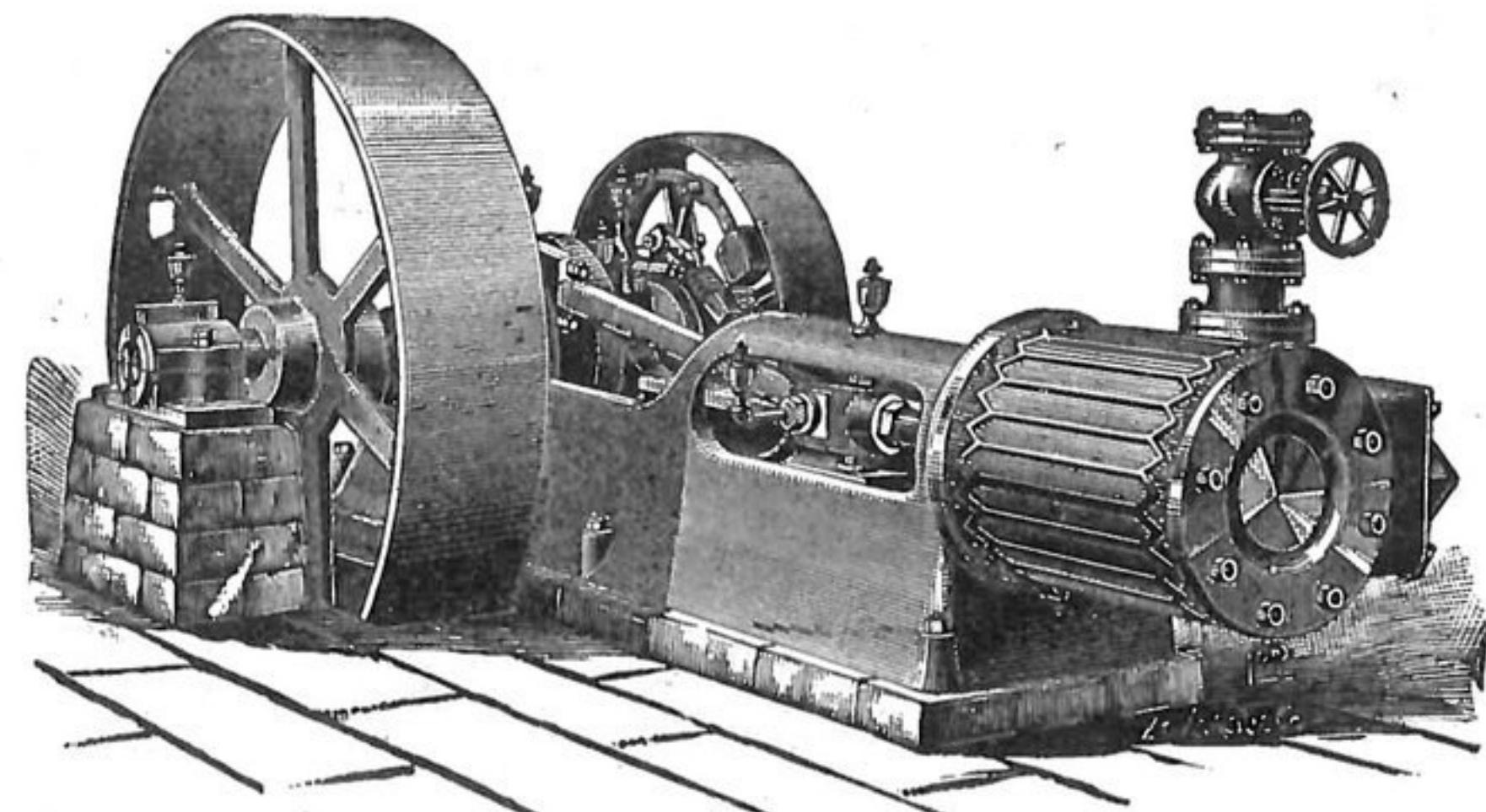
THE NEW PORTER HEAVY-DUTY ENGINE.



The Most Power for the Money, and All Things Considered the Most Economical.
For Illustrated Circular Address,

PORTER MANUFG. CO., LIMITED, SYRACUSE, N. Y.

Economic Power Plants



Especially Adapted to Electric Lighting and

WOOD-WORKING ESTABLISHMENTS
MANUFACTURED BY
VALLEY IRON WORKS, WILLIAMSPORT, PENN.

MILLING PATENTS.

Among the patents granted January 1, 1889, are the following:

Jas. F. Winchell, Springfield, O., No. 395,413, a crushing and grinding mill, assigned to the Foos Mfg. Co., same place.

John H. Woolcott, Cincinnati, O., No. 395,534, a roller reduction-mill.

Horace M. Fulwider, Redmon, Ill., No. 395,561, a machine for automatically weighing grain.

Allen R. Parkinson and James Pullinger, Monongahela City, Pa., No. 395,580, an apparatus for treating middlings.

Stephen Stone and John W. Kingston, Rochester, N. Y., No. 395,637, a middlings-purifier.

Jerome B. Sweetland, Pontiac, Mich., No. 395,639, a flour and meal bin and sifter.

George Summerton, San Francisco, Cal., No. 395,680, a rotary bolt.

Geo. H. Cormack, Rockford, Ill., No. 10,978, a reissue, original No. 353,924, preparing grain.

Among those granted January 8, 1889, are the following:

Harry W. Cowan, Gros, Dak., No. 395,743, an automatic grain-measure.

Cleon L. and Carl C. Hills, Bloomington, Ill., No. 365,747, self-raising flour.

Jos. H. Weeks, Battle Creek, Mich., No. 395,801, a dust-collector.

John Ritty, Dayton, O., No. 395,997, a machine for hulling green corn.

Jas. F. Winchell, Springfield, O., No. 396,058, a feed-regulator for grinding-mills, assigned to the Foos Mfg. Co., same place.

Wm. M. Jewell, Pine, Col., No. 10,979, a reissue, original No. 360,184, a feed-mechanism for roller-mills.

**DURABLE,
ECONOMICAL,
NOISELESS,
SELF-LUBRI-
CATING,
LOW-PRICED.**

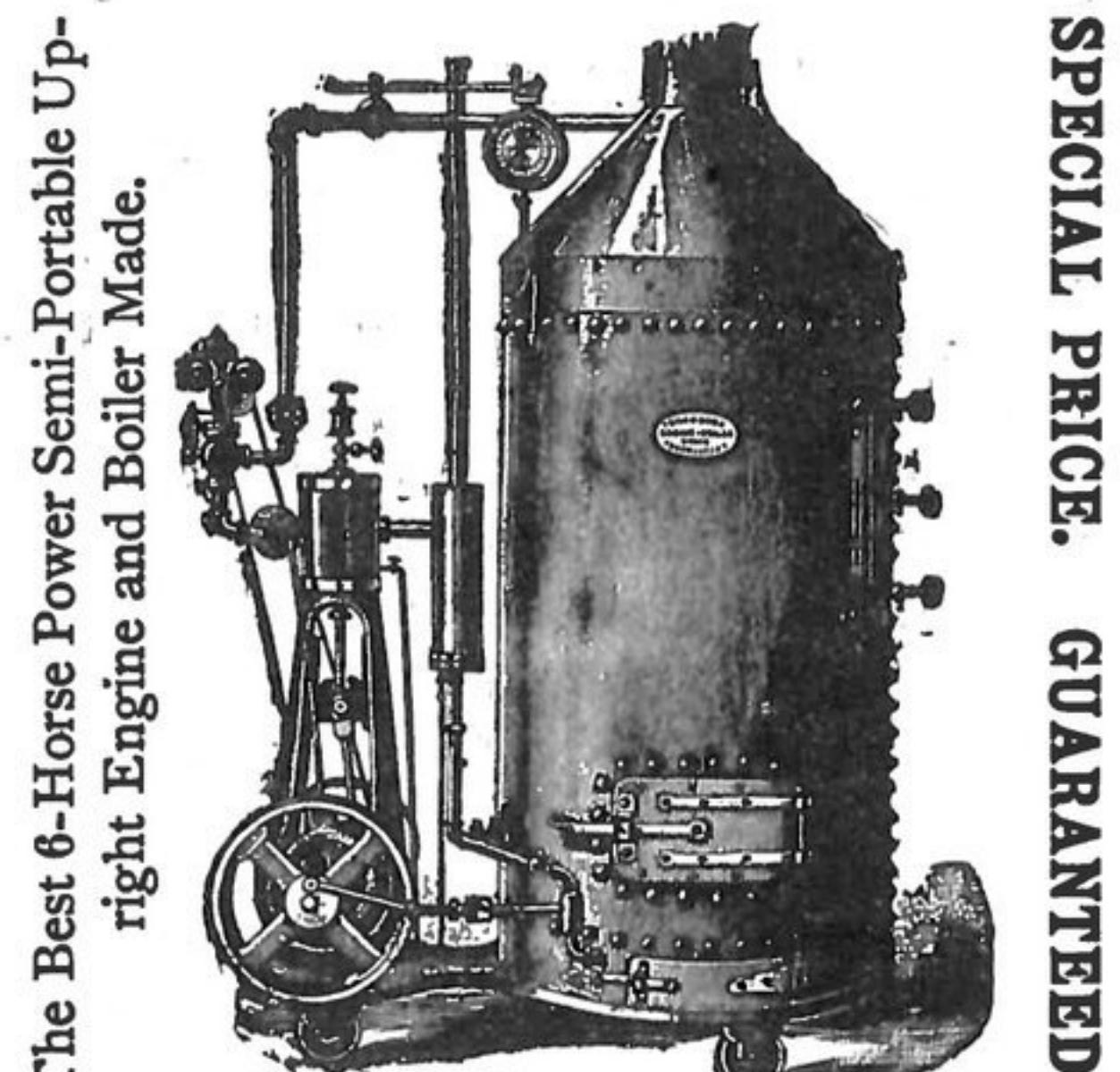
One and two Cylinder Engines, with vertical or horizontal boilers, are running 3 years without using a wrench on them.

1 to 15 H. P.
SEND FOR CIRCULAR
TO

**CASTLE ENGINE WORKS
INDIANAPOLIS, IND.**

**TONAWANDA
ENGINE AND BOILER WORKS**

A Large Assortment of Machinery.



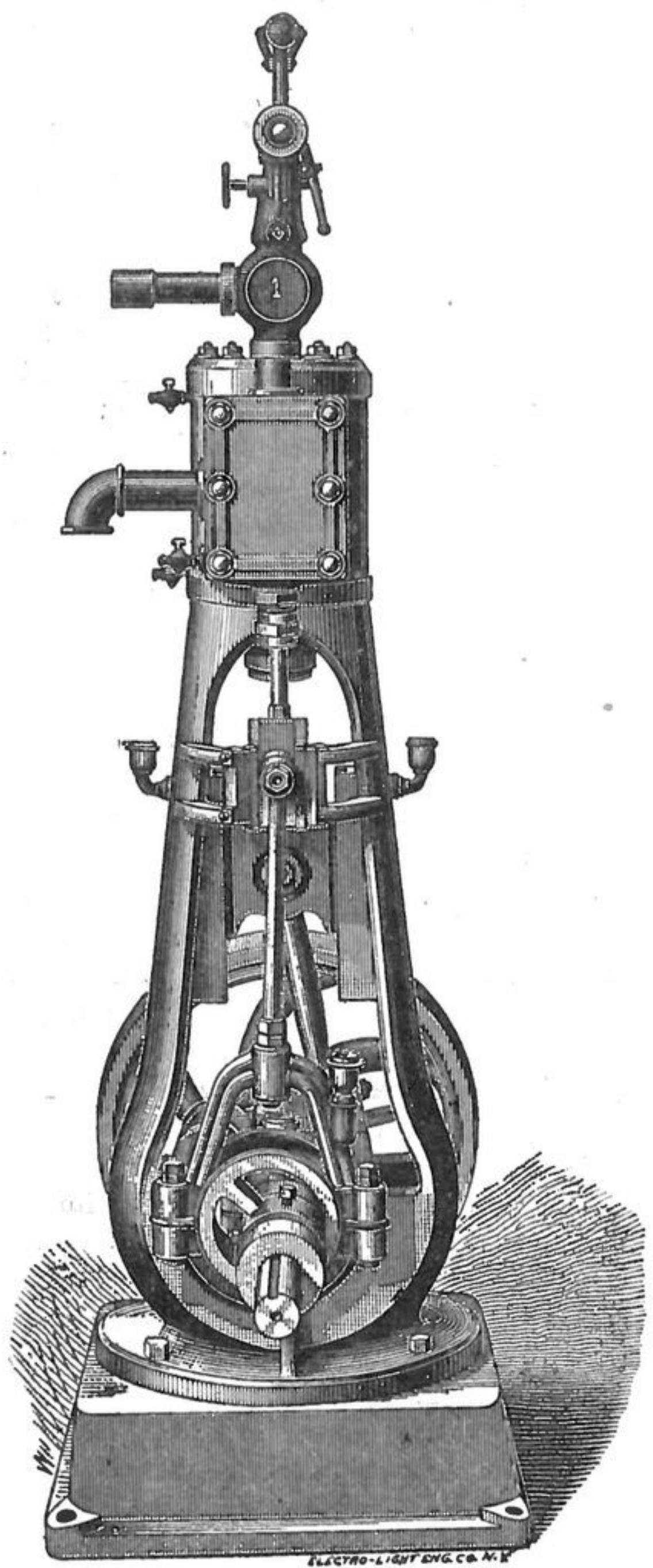
The Best 6-Horse Power Semi-Portable Up-right Engine and Boiler Made.

SEND FOR CATALOGUE.

ARMITAGE, HERSCHELL & CO.
Tonawanda N. Y.

SPECIAL PRICE. GUARANTEED.

AUTOMATIC VERTICAL ENGINES



Especially adapted for Small Electric Light Plants.
Perfect Regulation. Reversible Link Motion for Marine Use. Five to Fifteen Horse Power. Also manufacturers of

Lathes and Special Tools

Metal Patterns, Models and Machinery Built to Order.
Send for Prices and Specifications.

Lloyd & Sterrett

COR. 16TH AND STATE STS.,

ERIE, - - PENN.

We also manufacture the **YORK** Ice Making and Refrigerating Apparatus.



SEND for ILLUSTRATED CIRCULAR with PRICES.

PAYNE HIGH SPEED CORLISS ENGINE

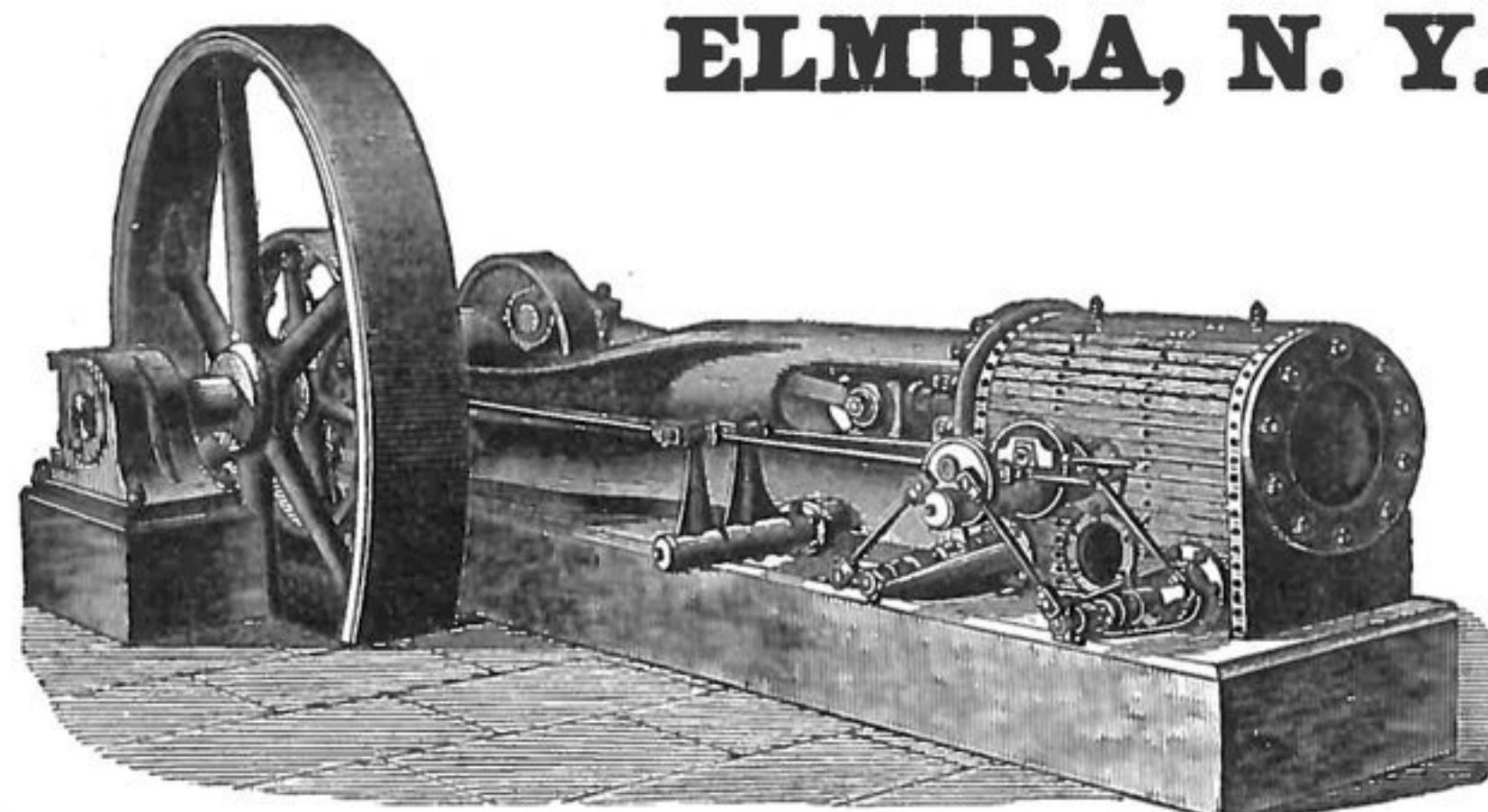
SHAFT GOVERNOR COMBINED WITH CORLISS WRIST-PLATE.

ECONOMY OF FUEL.

REGULATION EQUAL TO ANYTHING IN USE.

B. W. Payne & Sons,

ELMIRA, N. Y.



10 S. Canal Street,
CHICAGO, ILL.

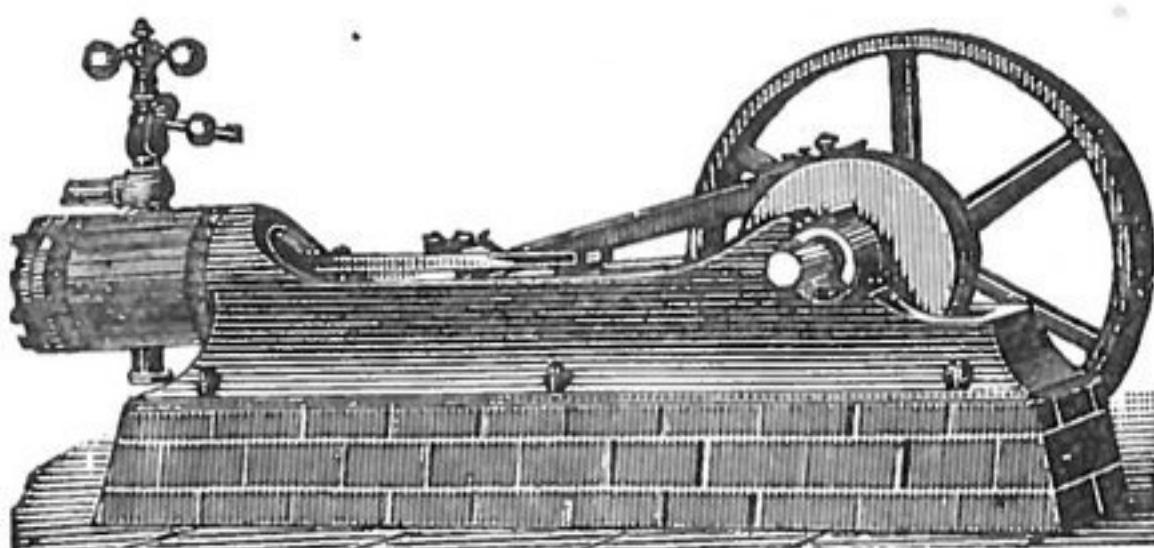
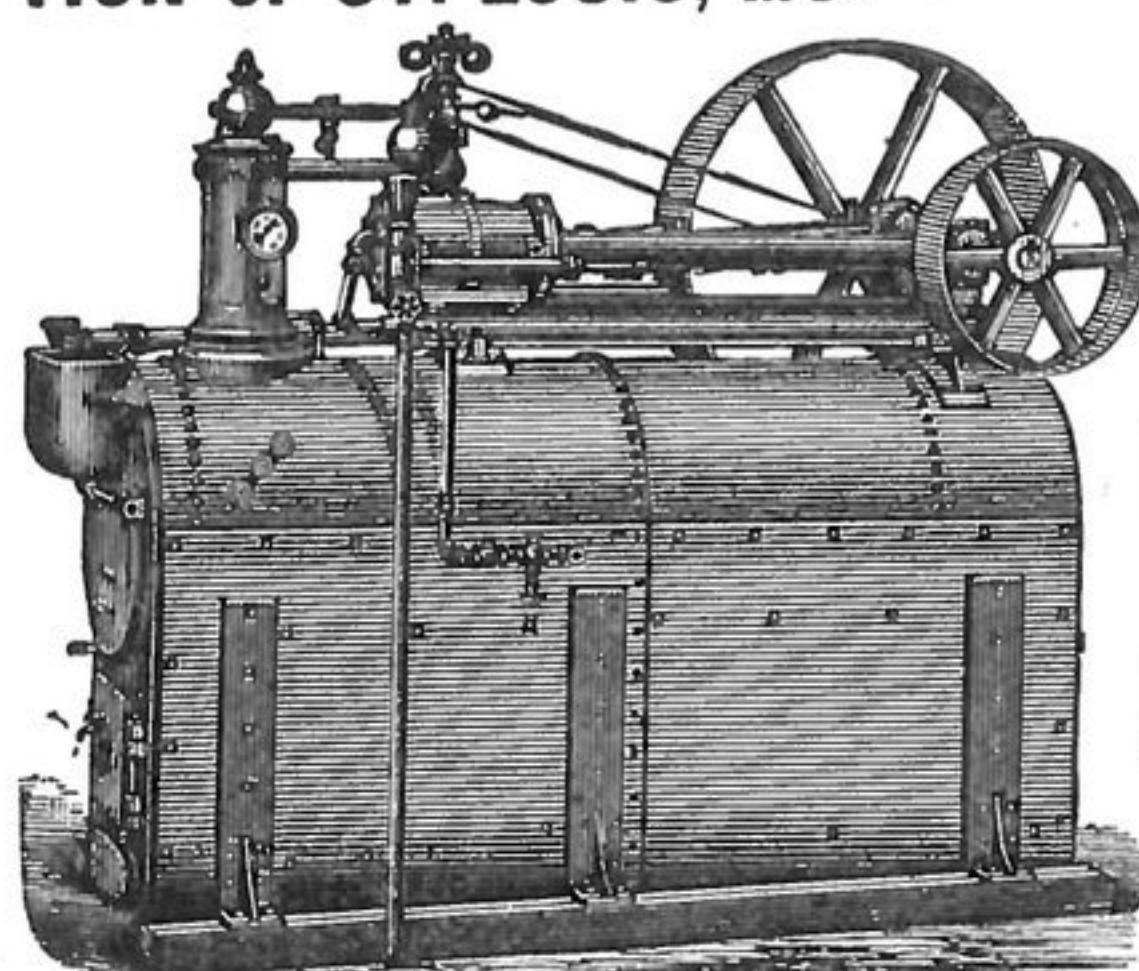
45 Dey Street,
NEW YORK.

Hill, Clark & Co.
BOSTON, MASS.

AUTOMATIC ENGINES FROM 2 TO 200 HORSE POWER.

SKINNER ENGINE CO. ERIE, PA.

Awarded THREE GOLD MEDALS
by the WORLD'S INDUSTRIAL and
COTTON CENTENNIAL EXPO-
SION of ST. LOUIS, MO.



PORTABLE and STATIONARY
ENGINES  BOILERS

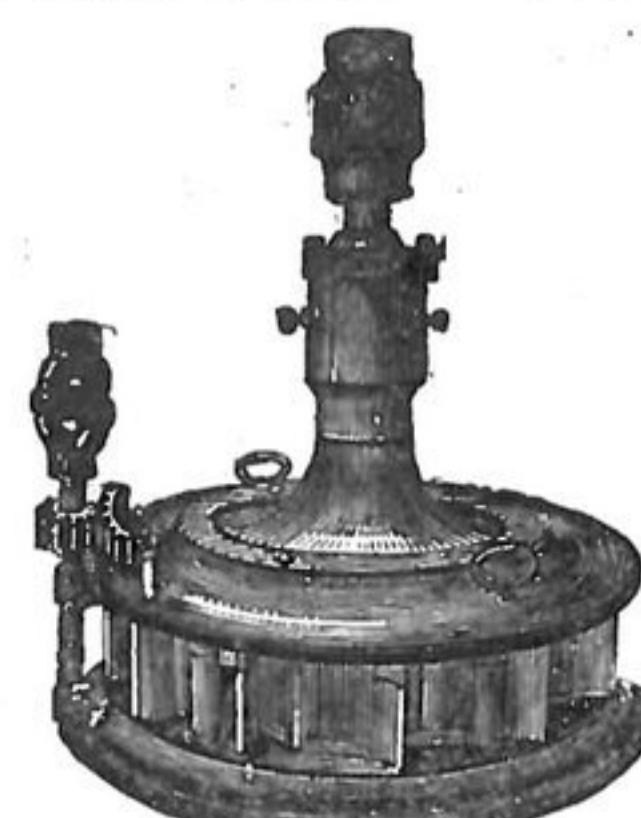
MORE THAN 2700 IN USE.

 Send for ILLUSTRATED
CATALOGUE and PRICES.

Eastern Office, C. R. Vincent & Co., Room No. 62, 15 Cortlandt St., New York.

 FLINT MILL MACHINERY A SPECIALTY.

IMPROVED YORK



TURBINE WATER WHEEL.

SEND for ILLUSTRATED CIRCULAR with PRICES.

D. L. Spear, miller, Ipswich, Dak., is dead.
 Campbellsburg, Ky., men project a flour-mill.
 J. J. Bittner, miller, Low Hill, Pa., assigned.
 W. R. Dunlap, miller, Cincinnati, O., is dead.
 The Loup City, Neb., Roller Mill Co. attached.
 The Corydon, Ky., flour-mill burned; loss \$6,400.
 Mitchell Bros., millers, Madelia, Minn., dissolved.
 The Madison, Dak., flour-mill burned; loss \$30,000.
 Zachry Bros. & Co., millers, Atlanta, Ga., dissolved.
 M. Kimball, grist-mill, North Dixmont, Me., is dead.
 Hodges & Newton, Florence, N. C., build a grist-mill.
 Wm Porter's grist-mill, New Hope, W. Va., exploded.
 J. & R. C. Haven, Washington, Ga., build a grist-mill.
 L. D. Taylor & Co., Gabbettsville, Ga., build a corn-mill.
 Eisenmayer & Co., millers, San Diego, Cal., incorporated.
 The Danville, Ky., Roller Mills sold to Frank & Anderson.
 Foley & Haas, Danville, Ky., build a 75,000-bushel elevator.
 Rouse & Raymond, Mountain Home, Ark., build a grist-mill.
 Moor, Baird & Compton, Zion, Ky., build a 60-barrel roller mill.
 Sanders Bros.' roller-mill, Brooke Co., W. Va., burned; loss \$6,000.
 Grissom, Ritchie & Williams, Burkesville, Ky., improved their flour-mill.
 S. Fahl's flour-mill, Mt. Blanchard, O., burned; loss \$5,000; insurance \$2,000.
 May Bros.' flour-mill, St. Thomas, Ont., burned; loss \$12,000; insurance \$6,700.
 The Fayette City Mill, Fayette, Mo., burned; loss \$16,000; insurance \$7,000.
 E. A. & S. L. Bean, millers, Faribault, Minn., held a meeting of creditors recently.
 The Northwestern Elevator Co.'s elevator, Wilmar, Minn., damaged \$2,000 by fire.
 The Henderson, Ky., Milling Co. turn their hominy mill into a full roller flour-mill.
 I. W. Barber, Easton, Md., increased the capacity of his flour-mill to 60 barrels a day.
 The Central Elevator Co., Chattanooga, Tenn., increase their elevator capacity to 300,000 bushels.
 J. T. Wayatt, Salisbury, N. C., wants an outfit for a millstone manufacturing plant which he proposes to start.
 The Waverly, Ia., Board of Trade's Minnesota & Northwestern Elevator burned: loss \$3,000; no insurance; fire incendiary.
 Jacob Reist, Elias Reist and Daniel Reist, doing business at Hamburg, N. Y., as the Reist Milling Co., made a general assignment Jan. 15.

The secretary of the Cincinnati Corrugating Co. writes us particulars in regard to the recent purchase by his company of the machinery, good-will and books of the iron roofing firm of Caldwell & Co. The latter was established in Cincinnati over 30 years ago, being the oldest concern in this line in the west and among the oldest in the whole country. They were engaged principally in the manufacture and sale of the Outcalt patent elastic-joint iron-roofing, for which they held a very substantial trade that stayed with them until the death of the senior member of the firm, a few months ago. Some of the oldest work alluded to in the corrugating company's well known circular, "Life of an iron roof," was of the Outcalt patent and was put on by this firm. One of the strong points of this roofing is that there are no nails exposed to the weather. However, the firm in question labored under the great disadvantage of not being able to obtain the steel sheets, now available for work of this kind. The Corrugating Co. are now better prepared than ever to turn out this as well as other improved forms of plain and corrugated roofing and siding, with the greatest promptness and in the highest state of perfection.

Says the Duluth, Minn., Tribune: The agitation of the wheat inspection problem has been taken as a cue by the Winnipeg *Call* to give Duluth wheat men a dig in the ribs. The *Call* in the density of its ignorance is to be pitied. Says this paper: "Manitoba farmers have even greater grounds for complaint against the Minnesota dealers, as whatever portion of our No. 1 hard that is shipped via Duluth is mixed with the inferior American grades and sent abroad as Manitoba No. 1 hard, thus injuriously affecting the reputation of the Manitoba article." Everybody who pretends to know aught of international grain shipping knows that every grain of Manitoba wheat which comes to Duluth is shipped in bond, and it is a very strange proceeding indeed if the United States customs officials permit the promiscuous mixing of the cereal while in their charge. Of course the statement is totally false, but the most amusing part of it is the charge that Manitoba 1 hard is "injuriously affected" by mixing with inferior American grades. Manitoba 1 hard is not bad wheat, but inferior American grades are not dealt in to any great extent in Duluth, and the idea that the Manitoba article is needed to help out the Duluth grades is too preposterous for serious consideration.

Commenting on the high prices paid to Minnesota farmers for their wheat on the crop of 1888, the Minneapolis *Market Record* says: There has been a great deal said since the beginning of the crop year on the peculiar conditions existing in the northwest. The cause of high prices of wheat have been commented on and criticised all over this country and even in Europe. The striking feature that, during all of this crop, wheat has been higher in Minnesota than in New York, has excited curiosity as to the cause of it. Minnesota and Dakota farmers realize that prices have been very remunerative, but that they have actually got more money at their farms for wheat than even New York farmers, few of them probably know. The peculiar characteristics of the different classes of wheat are very well represented by the kinds styled "regular" in the New York, Chicago and Minneapolis exchanges. While each is of a different class, there is similarity of prices they usually bring in markets that admits of comparisons. It takes good No. 1 northern, well cleaned, to pass as No. 2 spring in Chicago, neither of which is accepted on contracts of No. 2 red in New York, not being held by the rules equal to the latter in money values. But granting the point that the spring wheat is equal in legitimate money value to winter, and yet the extraordinary advantages of their market to northwest producers is shown. The following table of comparisons shows the average prices by months at each of the markets named from Sept. 1, the beginning of the new crop year in the northwest:

	Minneapolis average price.	Chicago average price.	New York average price.
Sept99	.99	1.04
Oct.	1.19	1.09½	1.10
Nov.	1.15	1.09¼	1.08
Dec.	1.12	1.01¾	1.03
Jan.	1.09	.99	1.01

The general average of prices on the crop to date, omitting fractions, is as follows: Minneapolis \$1.11, Chicago \$1.04 and New York \$1.05. By adding freight from Minneapolis to Chicago, say 6 cents a bushel to the cost here, and the average cost in Chicago is \$1.17, against Chicago average prices of \$1.04, showing the average prices on this crop have been 13 cents a bushel above Chicago. By a similar comparison with New York the average cost of Minneapolis wheat, on the basis of lake and rail freight of 18 cents a bushel, laid down there is \$1.29 a bushel, against an average price in New York of \$1.05, showing the price in Minneapolis on the crop has averaged some 24 cents a bushel higher than in New York. By similar comparison with Liverpool the difference is even greater in favor of this market. The foregoing statements are the facts, but to be below the mark, say prices have averaged 10 cents above any other market; that 10 cents a bushel has gone directly into the pockets of producers, and indirectly through them to the support of other branches of business. Allowing that the crop of Minnesota and Dakota was 60,000,000 bushels, it leaves 40,000,000 bushels for sale, after taking out bread and seed for both state and territory. That wheat has netted producers more than 10 cents a bushel extra through the direct agency of the Minneapolis market. The extra 10 cents a bushel on the 40,000,000 surplus amounts to the neat little sum of \$4,000,000. The sum of more than \$4,000,000 has been paid to northwest farmers in a little more than four months, as extra prices, above price farmers have got in any other state or country in the world. Indirectly it has gone through producers' hands to the support of every class of business or occupation, changing a year of threatened calamity to Minnesota general industries to one of exceptional prosperity. Inquiry as to the cause of such high relative prices leads straight to the Minneapolis mills and through them to one man, who has persisted in buying wheat at the prices, forcing others to take it at the same figures or not get it. He has showed confidence in his position and declined to be either coaxed or driven from it. He, almost alone, is entitled to the credit of scattering through the northwest these extra millions of dollars, and yet there are demagogues that will say C. A. Pillsbury is robbing the farmers. He has stood out against all propositions to entangle his firm in any thing in the shape of flour-trusts, and declined to shut down his mills either to break the prices of wheat or advance flour at the request of the great Milwaukee millers' meeting.

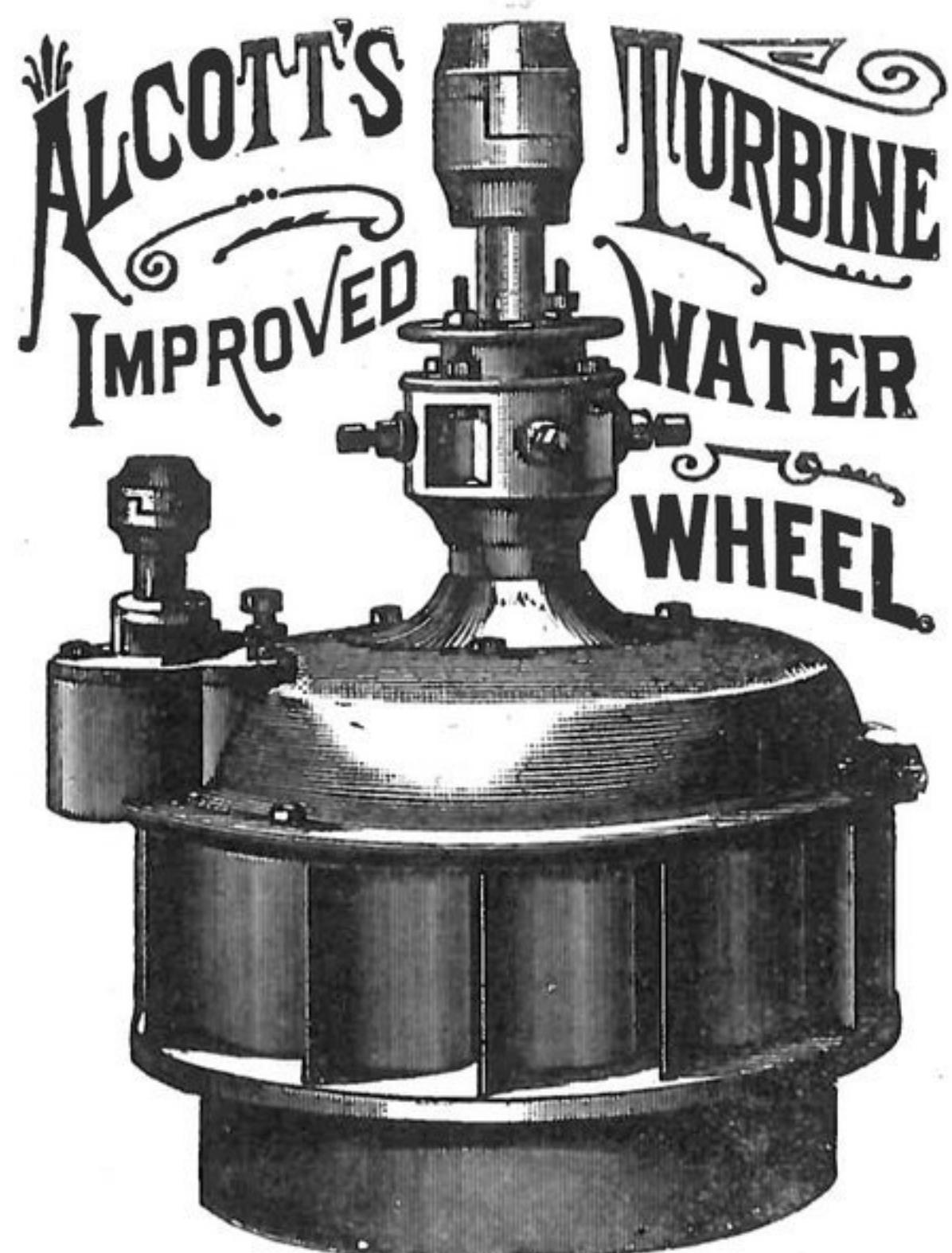
BOOKS AND PAMPHLETS.

The number for January 19 of *Good Housekeeping* is out. It contains an unusually rich table of contents. Mary Barr Munroe's second paper on "Table Etiquette" covers the matters of invitations and acceptances and the reception and entertainment of guests. Manual training is a prominent educational topic and the series of papers on "Manual Training in the Household," begun in this number, will be read with interest. "An Idyl of Red Oak Hill," by Penelope A. House, is an exceedingly readable story. Economy in dress is an art and a science in which much is to be learned by our growing-up daughters. The chapter by "Cuno Vidal" is practical and terse. Children like to earn pin-money, and Annie Curd points out some useful ways of doing it. Dr. Amelia A. Whitfield's paper on the care of babies this week treats of croup. There is suggestiveness in what Mrs. M. H. Faris writes on "The Cynosure of Home." A man may honor "A Kitchen Apron" and may be proud of wearing it if he puts it on in the spirit that moved "A Country Parson." Adelaide G. Marchant gives helpful hints about Sunday Breakfasts. Some new departures are indicated in Helena Row's chapter on "Family Fashions and Fancies."

L. L. WHITLOCK,
Advertising Agent
FOR MANUFACTURERS.

TRADE JOURNALS A SPECIALTY.
P. O. DRAWER 5323. Boston, Mass.

As Agent for Advertisers instead of Papers, I obtain the Best Rates Possible for my Customers.



THIS WHEEL GIVES HIGH RESULTS, AND IS ACKNOWLEDGED THE BEST, MOST PRACTICAL AND EFFICIENT TURBINE MADE. FOR SIMPLICITY, DURABILITY, AND TIGHTNESS OF GATE IT HAS NO EQUAL.

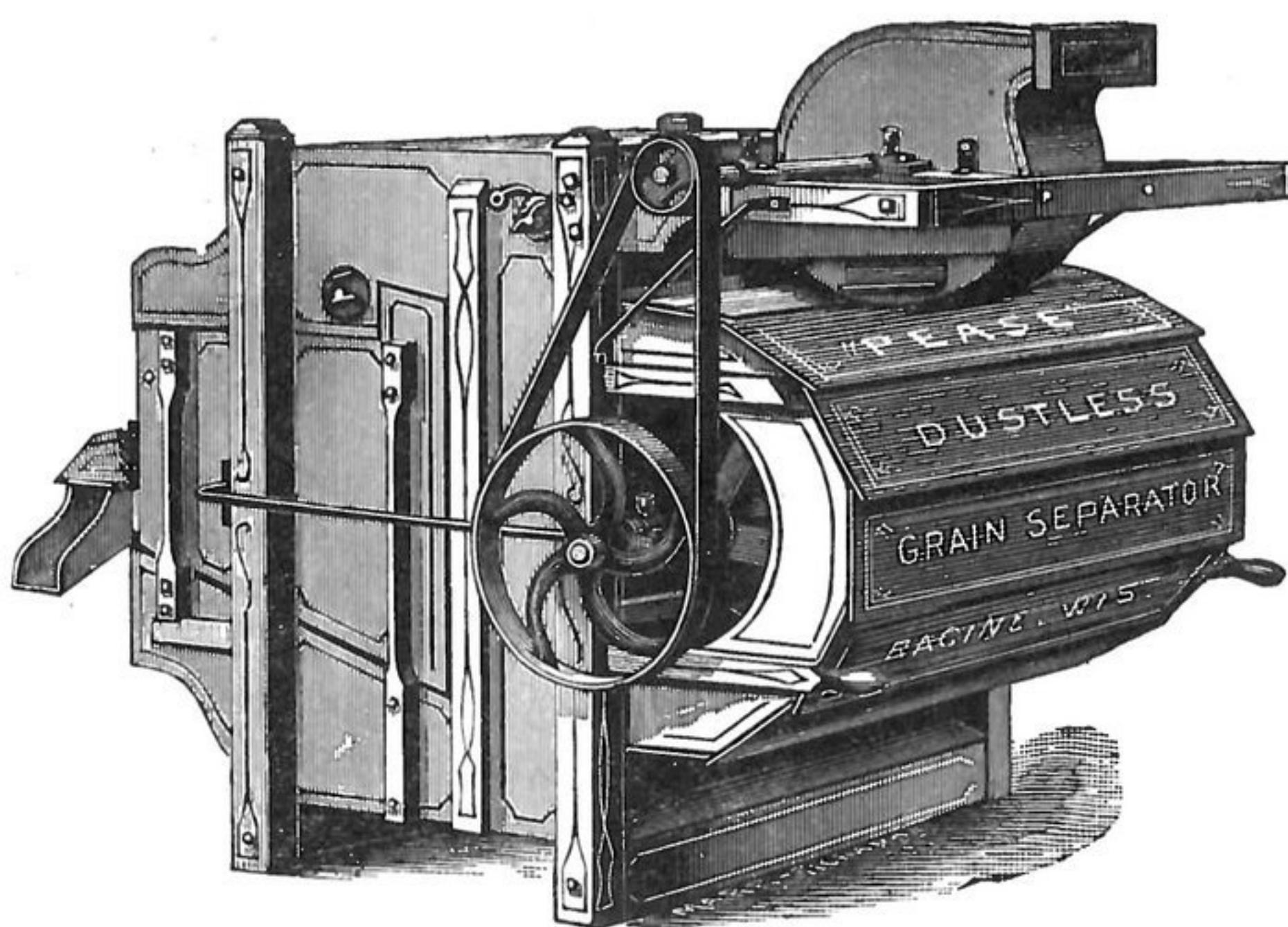
State requirements and send for Catalogue to
T. C. ALCOTT & SON,
MOUNT HOLLY, N. J.

PLEASE mention THE MILLING WORLD when you write to advertisers. It will pay you to do this.

THE STEVENS PORTABLE MILLS
For CORN and FEED GRINDING
Genuine French
BUHR STONES
Power Corn Sheller
Prices Below the Lowest
A. W. STEVENS & SON
AUBURN, N. Y.
Mention this paper.



THE "PEASE" DUSTLESS GRAIN SEPARATORS.



These Separators not only clean grain, but separate and SCREEN it. They require less space, and less power than any others, and are less expensive.

FANNING MILLS, both side shake (for hand use or power) and also the famous "Pease" end shake mills, for all kinds of grain. Various sizes capacity 100 to 500 bushels per hour.

—THE—

W. G. ADAMS
POWER
CAR PULLER.

Elevator Supplies of All Kinds.

For Full Descriptive Catalogues and Prices,
Address the

E. H. PEASE MANUFACTURING CO., RACINE, WISCONSIN.

The Best



WASHER

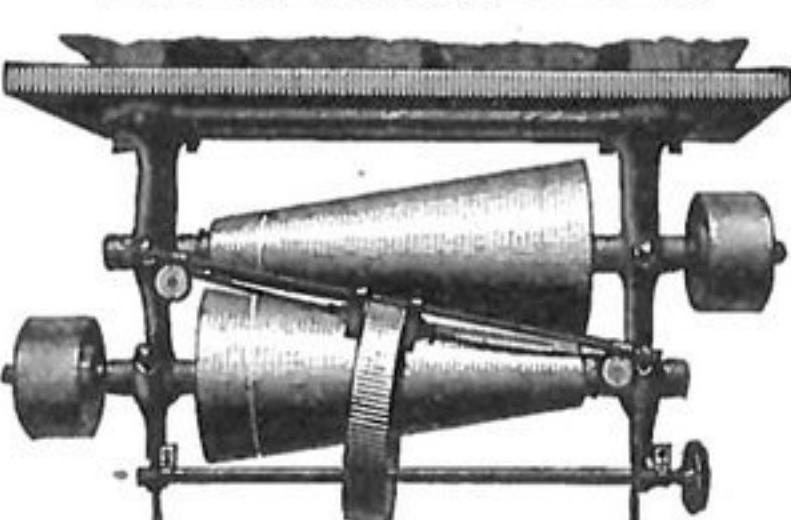
We will guarantee the "LOVELL" WASHER to do better work and do it easier and in less time than any other machine in the world. Warranted five years, and if it don't wash the clothes clear without rubbing, we will refund the money.

AGENTS WANTED can show proof that agents are making from \$75 to \$150 per month. Farmers make \$200 to \$500 during the winter. Ladies have great success selling this Washer. Retail price, only \$5. Sample to those desiring an agency \$2. Also the Celebrated KEYSTONE WRINGERS at manufacturers' lowest prices. We invite the strictest investigation. Send your address on a postal card for further particulars.

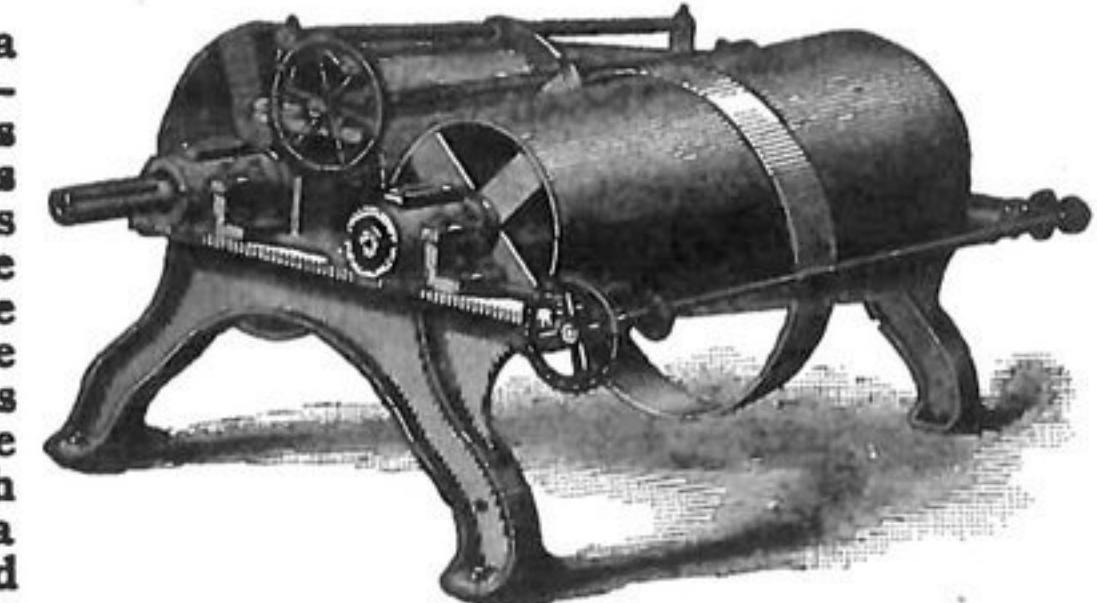
LOVELL WASHER CO., Erie, Pa.

THE EVANS FRICTION CONE & FRICTIONAL GEARING

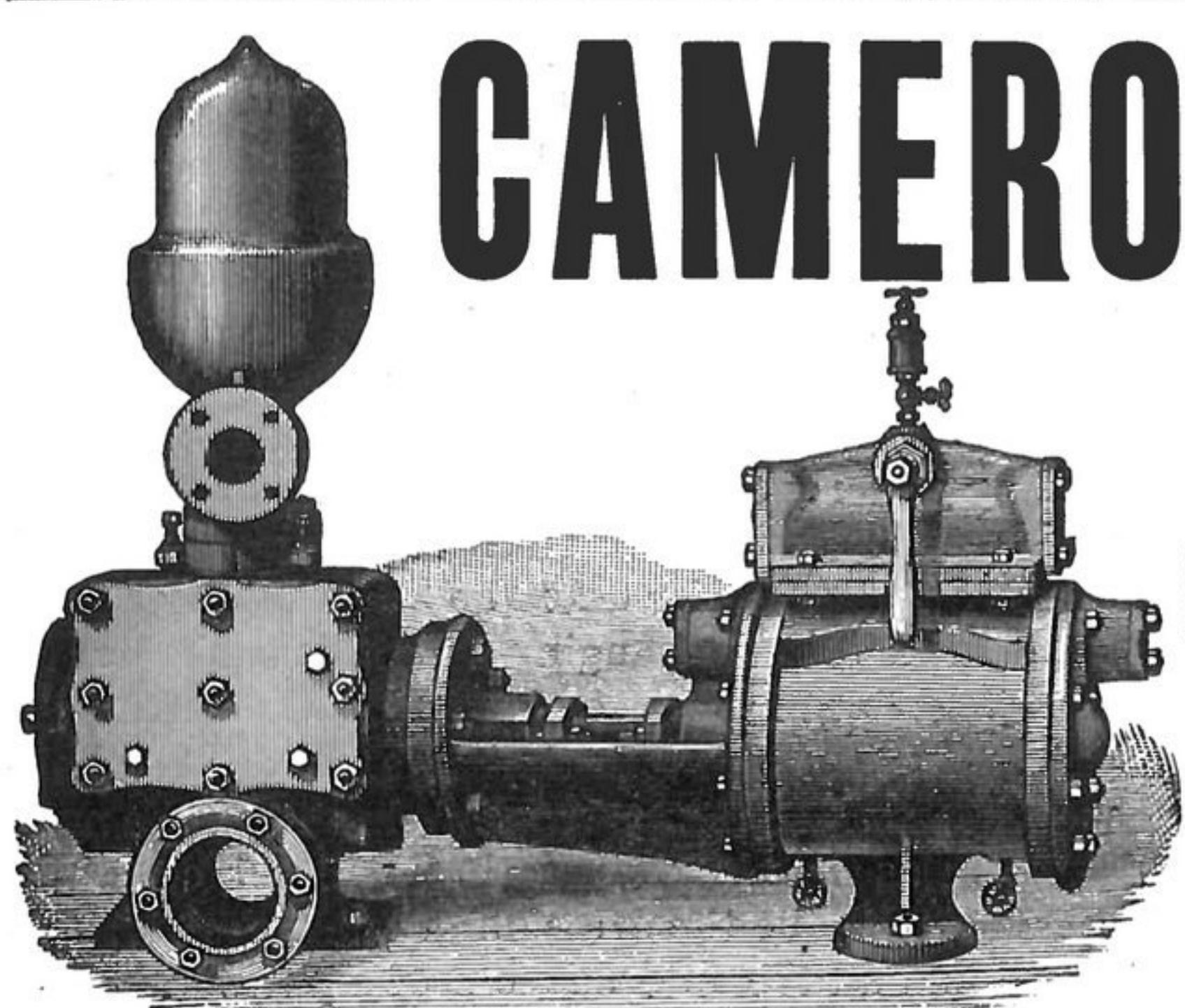
"PATENTED."



This cut represents a set of hanging cone pulleys. This pattern is intended for that class of machinery that stops and starts at the same speed, and at the same time be able to change the speed more or less while running. These cones are also fitted with a governor where a steady motion is required and the initial power is fluctuating. All sizes made from $\frac{1}{2}$ Horse Power to 50 Horse Power. SEND FOR ILLUSTRATED CATALOGUE.



EVANS FRICTION CONE CO., 85 Water St., BOSTON.



CAMERON STEAM PUMP

THE STANDARD OF EXCELLENCE.

SIMPLE! COMPACT! DURABLE!
"NO OUTSIDE VALVE GEAR."

Steam, Air & Vacuum Pumps in Every Variety

→ (o) ←
FOR ILLUSTRATED CATALOGUE ADDRESS

THE A. S. CAMERON STEAM PUMP WORKS

Foot of East 23d Street, - New York.

EUROPEAN ECHOES.

AUSTRO-Hungary is finding a better market for her grain and flour now than she has had for many years.

THE combination of millers between the Tweed and the Humber in England is accepted as achieved. The syndicate propose to begin operations about February 1.

EUROPEAN reports affirm that France has been buying wheat freely from Russia, Roumania, Australia and India, while her purchases from the United States have been quite small, actually less than last year. French reports, however, say that while offers of Russian wheat continue liberal, these wheats have not been satisfactory to millers, as they yield badly.

SAYS the London "Miller" of December 31: Farmers' wheat remains the heavy-weight that keeps down value; it undersells every sort imported, although forming but about one-third of the supplies on offer. This cheapness of native wheat has caused some brands of country flour to lose firmness 3d. to 6d. per sack, but most sorts of flour, town-made and imported, well maintain quotations under a retail demand.

LONDON Corn Exchange quotations at the beginning of the year included the following: New Kent or Essex white English wheat 30 to 38s. per 496 pounds; old white English 40 to 48s.; white Norfolk 30 to 36s.; red Norfolk 28 to 35s.; Rivetts 25 to 30s.; Duluth 44 to 46s.; red winter wheat 42 to 44s.; California 43 to 44s.; Oregon 43 to 44s.; Chilian 41 to 42s.; Australian 43 to 44s.; New Zealand 40 to 43s.; red Bombay 34 to 47s.; white Bombay 38 to 39s.; Dantzig 40 to 44s.

THE British outlook at the opening of 1889 is thus summed up by the London "Miller": To Russia the outlook shows large stores of wheat available and a fleet of steamers ready to load. But excepting Odessa the big harbors are closed or closing, and it is very uncertain whether between this date and the end of March Russian shipments will be large or small. Judging, too, by the number of ships, grain-laden, that are now passing the Dardanelles, Italian and other ports will receive a large proportion of the stocks on passage. Australia promises us nothing from the deficient crops now being harvested, but the Argentine Republic, where harvest is beginning and will go on through February into March, over a million quarters of wheat are likely to be available for export to Europe. Yellow La Plata maize is offered at 19s. India proceeds slowly with shipments and exhibits strength over the crop reserves. New crop prospects are uncertain, and the last two years have shown that any sudden increase in the yield of wheat, either by season's favor or increased acreage, can not be expected without due warning. The case is very different from Russia, where a good yield means ten million quarters over a poor yield. Germany continues to ship wheat to an important extent, drawing supplies to its ports from various points. But at present prices there is no eagerness to ship beyond current supplies, and "forward" business scarcely exists. French and most other markets are but poorly provided with good grain, most samples being only second and third rate. It is therefore probable that for Californian and fine Russian wheat there will be much competition in spring and summer.

CONTEMPORARY COMMENT.

It is more evident as the crop year moves along that the Manitoba wheat crop was overestimated, or better, perhaps, overstated. A calamity was met in the partial destruction of the last wheat crop, and it is proved beyond question that the people there tried to hide it to escape adverse opinion of the climate.—*Minneapolis Market Record*.

The statistician says nothing about the deficiency in the weight of the wheat crop, leaving that presumably for his

March report, as usual. The shortage in weight is certainly equivalent to 20,000,000 bushels; it may be nearer 30,000,000 bushels. In any event the crop must be figured under 400,000,000 commercial bushels. In measured bushels Prof. Dodge's latest estimate is about 9,000,000 bushels more than the last previous estimate, which was 406,000,000 bushels.—*Chicago Daily Business*.

The prediction that "wheat will pull itself" has not been realized, and the switcher who had the courage to sell it in the West as against a purchase on the seaboard seems likely to be still further rewarded.—*Baltimore Journal of Commerce*.

THE December report of the Department of Agriculture, which publishes in detail estimates of some of the more important crops, makes the product of corn 1,987,790,000 bushels, grown on 75,672,763 acres, valued on the farm at \$677,561,580, or 34.1 cents per bushel, against 44.4 for the crop of 1887, a decrease of 23 per cent., the product of 1887 being 27 per cent. less in volume than that of 1888. The wheat aggregate is 414,868,000 bushels, grown on 37,336,138 acres, valued at \$384,248,030. The average yield is 11.1 bushels per acre; winter wheat 11.6 bushels and spring wheat 10.3 bushels per acre. The average farm value is 92.6 cents per bushel, against 68.1 cents for the previous crop, a difference due more to foreign than domestic scarcity. The aggregate for oats is 707,737,000 bushels, grown on 26,998,282 acres and valued at \$195,424,240. This is 27.8 cents per bushel, against 30 cents for the crop of 1887. A comparison of aggregate values shows that the present corn crop is worth only \$31,000,000 more than the previous ones; wheat \$74,000,000 more; oats \$5,000,000 less. According to the government figures the production of wheat in the principal states in 1888, in comparison with 1887, was as follows:

	1888, bu.	1887, bu.
Ohio...	29,000,000	35,000,000
Michigan.....	24,000,000	21,000,000
Indiana.....	28,000,000	37,000,000
Illinois.....	33,000,000	36,000,000
Minnesota.....	28,000,000	36,000,000
Dakota.....	38,000,000	52,000,000
Iowa.....	24,000,000	26,000,000
Kansas.....	16,000,000	7,000,000
Missouri.....	18,000,000	27,000,000
Wisconsin.....	14,000,000	13,000,000

POINTS IN MILLING.

MANY mills are so built that they may justly be said to show a "structural weakness." When they are in operation there is a continuous perceptible jarring. Walls and floors tremble and windows rattle most uncomfortably. A mill built that way is built wrong, and very wrong. Delicate machinery is not helped in operation by dancing a jig on a vibrating floor, and the miller who builds his mill on the spring plan will lose a good deal more in the long run than it would cost him to build sufficiently strong at the start.

RECENTLY I visited a mill which would serve as a model of what a mill should not be. I will not locate it, as the owner might resent the criticism. On the outside it looked like a good building; but when once inside the stranger would be apt to wonder what ailed the mill. The vibration was really uncomfortable. Every part seemed to be weak. The floors came up as the belts tugged at the machinery, and the ceilings came down to meet the floor as the machines sagged back, and up and down it all went until one felt that he had been suffering a fit of old-fashioned ague while in the mill. Leaving the establishment, I turned to take a parting look at it and almost imagined that I could see the whole building jiggling on its foundation from the commotion within. The owner of that shaking mill could not, or at least did not, notice that he was taking an unusual amount of exercise in hanging on to his teeth, but he was, and the jiggling that was endangering his teeth must have endangered the machines at the same time. The shaking that would loosen the teeth in a man's head and the nails in his boot-heels, as the shaking of that mill did, certainly ought to be able to shake the dress off a buhr, the corrugations off a roll and all the internals out of a purifier.

WANTED**FLOUR DRESSER.**

The MILLERS of the United States and Canada to write us for our new pamphlet and revised price list of our JONATHAN MILLS **UNIVERSAL**

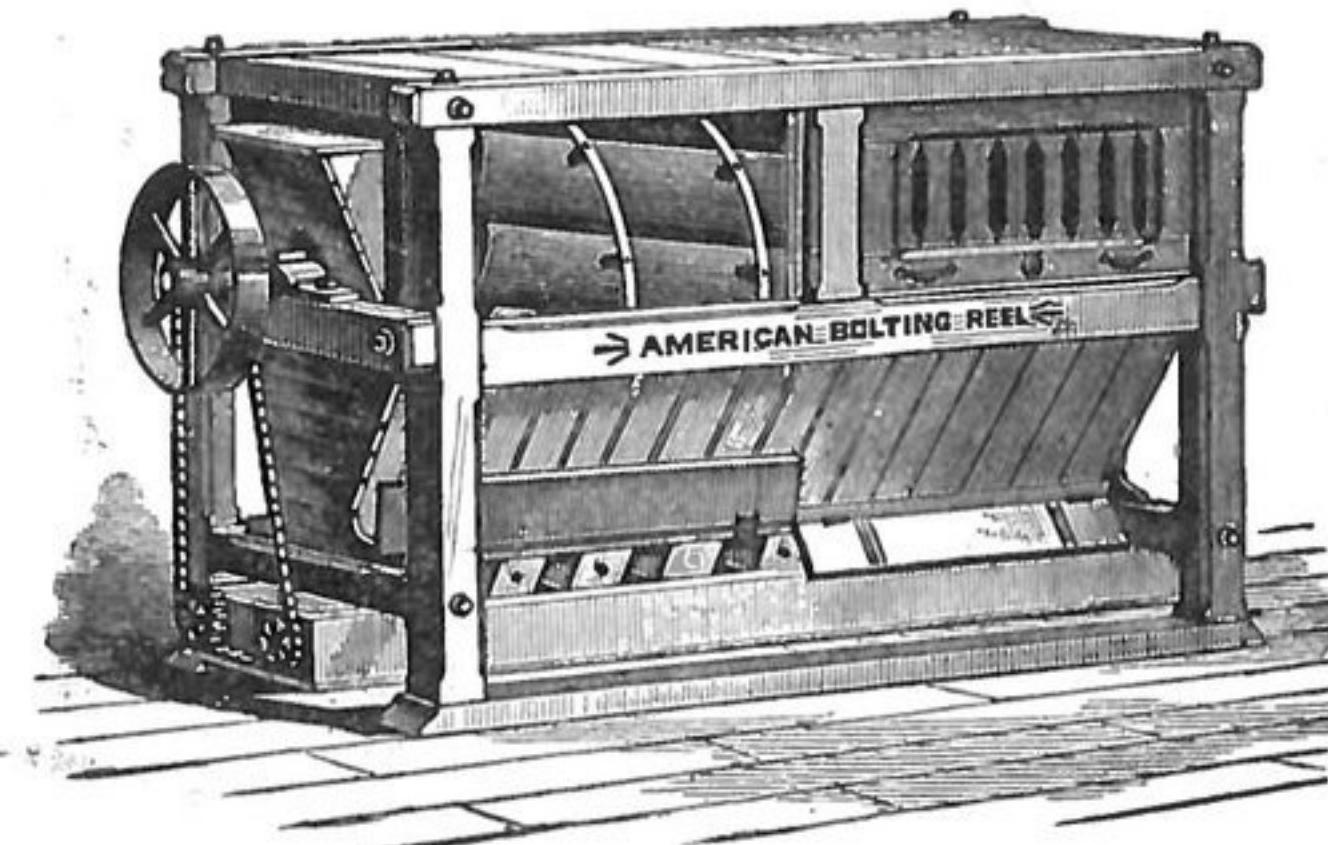
The best machine on the market. The fact that not a single one has ever been displaced by any other Reel speaks volumes.

We carry a full line of Heidegger & Co.'s Bolting Cloth and Gritz Gauzes. Give us trial order.

**THE JONATHAN MILLS MFG. CO.,
CLEVELAND, OHIO, U. S. A.**

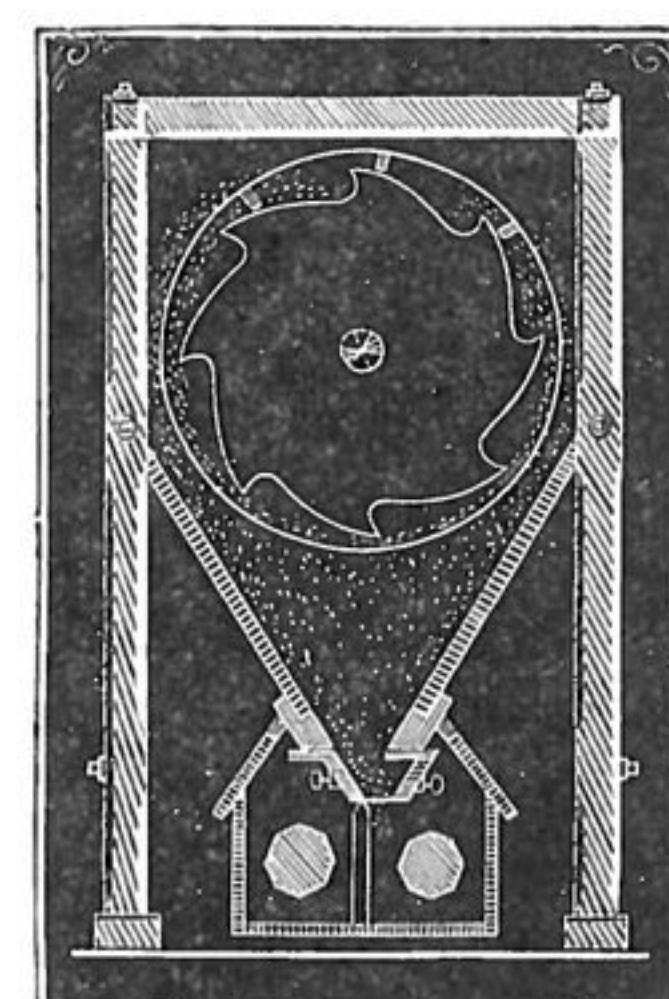
THE LATEST!**CHEAPEST, BEST! IT BEATS THEM ALL!****THE****American Bolting Reel**

THE AMERICAN BOLTING REEL embraces many entirely new features and advantages for bolting all kinds of milling stock: being adapted for either soft or coarse stock. Its capacity is not surpassed; will bolt freely in warm weather; no clogging or wearing of cloth.



A trial will prove to your entire satisfaction its great superiority as a Bolting Machine.

I will supply these Reels to be tested with any other and leave the judgment with the miller.

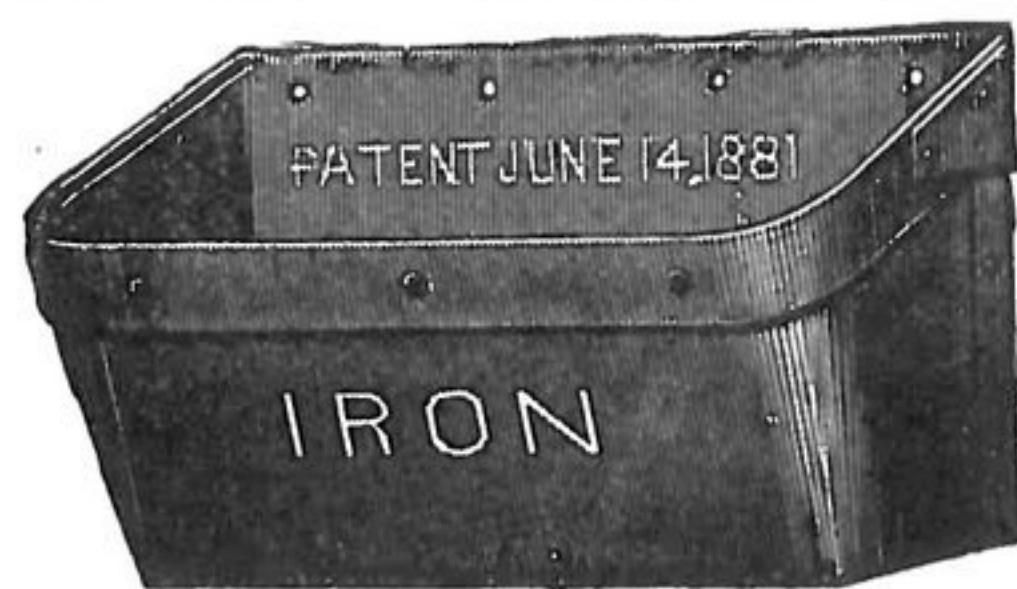


In presenting the American Bolting Reel to the milling public, I call the attention of every miller and mill owner to the following facts:

- 1st. For simplicity, durability and capacity it has no equal.
- 2d. The American Bolting Reel is not surpassed by any other, for handling all kinds of break stock, dusting middlings, stock from smooth rolls, middlings stones, or re-bolting cut-offs and break flour. Buhr millers will greatly improve their flour both in quality and color by re-bolting on the American Bolting Reel.
- 3d. When in operation the Reel is in perfect balance, the stock being evenly distributed on either side, therefore requiring less power and less wear of cloth as a result. The machine is built of selected material and is not surpassed in finish.
- 4th. It is just the Reel millers have long sought for to take the place of centrifugal and other Reels not giving entire satisfaction.
- 5th. The Reel can be driven from either end.
- 6th. The Reel runs slow, quiet and smooth.

WRITE FOR CIRCULAR AND PRICES.**THIRTY DAYS' TRIAL GIVEN.**

D. G. REITZ, BERLIN, PENN.

**BOSS ‡ ELEVATOR ‡ BUCKETS.**

If you are interested ask for Prices. Manufactured only by
W. P. MYER, INDIANAPOLIS, IND.

16, 18 AND 20 EAST SOUTH STREET.

Made of sheet steel, with heavy band.



Made of tinned steel plate, with iron band.



OFFICE OF THE MILLING WORLD,
BUFFALO, N. Y., January 19, 1889.

On Friday of last week a lack of speculative demand made the markets weak and lower all around. The pressure of cash stuff was heavy. January wheat closed at $99\frac{1}{4}$ c. and May wheat at \$1.04 $\frac{1}{2}$. The Government crop report raised the wheat yield of 1888 from 405,000,000 to 415,000,000 bushels. The increase had very little effect on prices, as the situation has for some time proved that the figures of the crop published by the Government were too low. It would not surprise the dealers to see the figures advanced to 430,000,000 bushels. January corn closed at $44\frac{3}{4}$ c. and oats at $31\frac{1}{4}$ c. Wheat flour was fairly active at the opening, but slowed down with the fall in wheat. The minor lines were quiet.

On Saturday wheat slumped in consequence of the governmental crop report, showing about 75,000,000 bushels for export, and on heavy foreign short and local long selling. January wheat opened at $99\frac{1}{4}$ c. and closed at $98\frac{1}{4}$ c. Options 5,640,000 bushels. January corn ruled at $44\frac{3}{4}$ c. and oats at $31\frac{1}{4}$ c. Wheat flour was dull at old prices, with holders willing to make concessions. The market showed decidedly weak spots. Buyers held off. The minor lines were featureless.

Monday brought still lower markets on heavy realizing. January wheat sank to $96\frac{1}{2}$ c. at closing, and even May was at \$1.01 $\frac{1}{2}$ and June at \$1.01. Options 6,500,000 bushels. January corn ruled at $44\frac{1}{4}$ c. and oats at 31c. Wheat flour was dull, weak and lower to sell, with no export demand excepting odd lots for Great Britain and the West Indies. Concessions were made all along the line. There were no marked features in the minor lines.

On Tuesday there was less activity and more steadiness in the markets. January wheat opened at 96c. and closed at $96\frac{1}{2}$ c. Options 5,240,000 bushels. May wheat closed at \$1.01 $\frac{1}{2}$ and June at \$1.01 $\frac{1}{4}$. January corn closed at $44\frac{1}{2}$ c. and oats at $31\frac{1}{4}$ c. Wheat flour was dull and neglected at Monday's concessions in prices, but holders did not press sales. Business was moderate. There were no marked features in any of the minor lines.

The visible supply in the United States and Canada was: 1889. 1888. 1887.

	Jan. 12.	Jan. 14.	Jan. 15.
Wheat.....	37,498,541	48,248,132	62,825,506
Corn.....	11,842,242	6,737,490	15,768,856
Oats.....	8,434,108	5,686,040	4,807,139
Rye.....	1,687,251	313,716	457,750
Barley.....	2,611,884	3,224,874	2,524,007

On Wednesday, as a result of discouraging cables and no European demand, the markets went lower. January wheat closed at $96\frac{1}{2}$ c. and May at \$1.01 $\frac{1}{8}$. Options 3,000,000 bushels. Europe seems inclined to take no more American wheat at 96c. than was taken when the price was \$1.16 or more. The Europeans evidently have more wheat than the estimates showed, and they quite as evidently have not learned that there is far more wheat to be had in the United States than the reports of the past months showed. On the whole, it may be said that speculation and misrepresentation have exerted a most mischievous influence on prices and trade on this crop. January corn closed at $44\frac{1}{4}$ c. and oats at $31\frac{1}{4}$ c. Corn is freely taken for export. Wheat flour receipts were falling off. Export sales were small. There was no change in quotations. Minor lines were featureless.

On Thursday the markets were dull and irregular, closing higher, with more bullish feeling. January wheat closed at $96\frac{3}{4}$ c. and May at \$1.02. Options only 1,200,000 bushels. Export

orders were reported but not confirmed. January corn ruled at $44\frac{3}{4}$ c. and oats at $31\frac{1}{4}$ c. Sales small in both. Buckwheat grain was 60 @ 62c. nominally. Rye grain was 56@57c. for Jersey and Pennsylvania on track, and 60c. on track and 65c. asked afloat for No. 1 State. Barley was neglected at 78c. for 2-rowed State for February. Malt was dull at \$1.10@1.12 for city, 90c. for 2-rowed State and 98c. for six-rowed State. Mill-feed was dull at the following quotations: 65@75c. for the whole range of 40, 60 and 80 lbs. spring and winter; 80@85c. for 100 lbs.; 90c. for sharps; 80c. for rye; screenings 50@80c; oil meal, \$1.45@1.50; cotton meal, \$1.25@1.28; barley meal 90c., nominally for the latter.

Wheat flour was dull and slow. Holders were anxious to sell, but buyers held off and took only what they needed to fill freights. The quotations were as follows:

SPRING FLOUR.

	Sacks.	Barrels.
No grade.....	\$1.90@2.15	\$....@....
Fine.....	2.15@2.40	2.50@2.80
Superfine	2.90@3.15	3.20@3.35
Extra No. 2.....	3.30@3.45	3.45@3.65
	New. Old.	New. Old.
Extra No. 1.....	3.70@4.40	3.80@4.40
	New. Old.	New. Old.
Clear	3.90@4.65	4.40@4.90
Straight	5.15@5.65	5.65@5.90
Patent	5.75@6.40	6.25@6.80

WINTER FLOUR.

	Sacks.	Barrels.
No grade.....	\$1.90@2.15	\$....@....
Fine	2.50@2.75	2.70@2.90
Superfine	3.15@3.30	3.25@3.40
Extra No. 2.....	3.30@3.45	3.60@3.80
Extra No. 1.....	3.70@4.65	3.90@5.40
Clear	4.20@4.50	4.40@4.80
Straight	4.90@5.15	4.90@5.50
Patent	5.15@5.30	5.30@6.15

CITY MILLS.

W. I. grades.....	\$5.00@5.15
Low grades.....	2.90@3.15
Patents.....	5.90@6.25

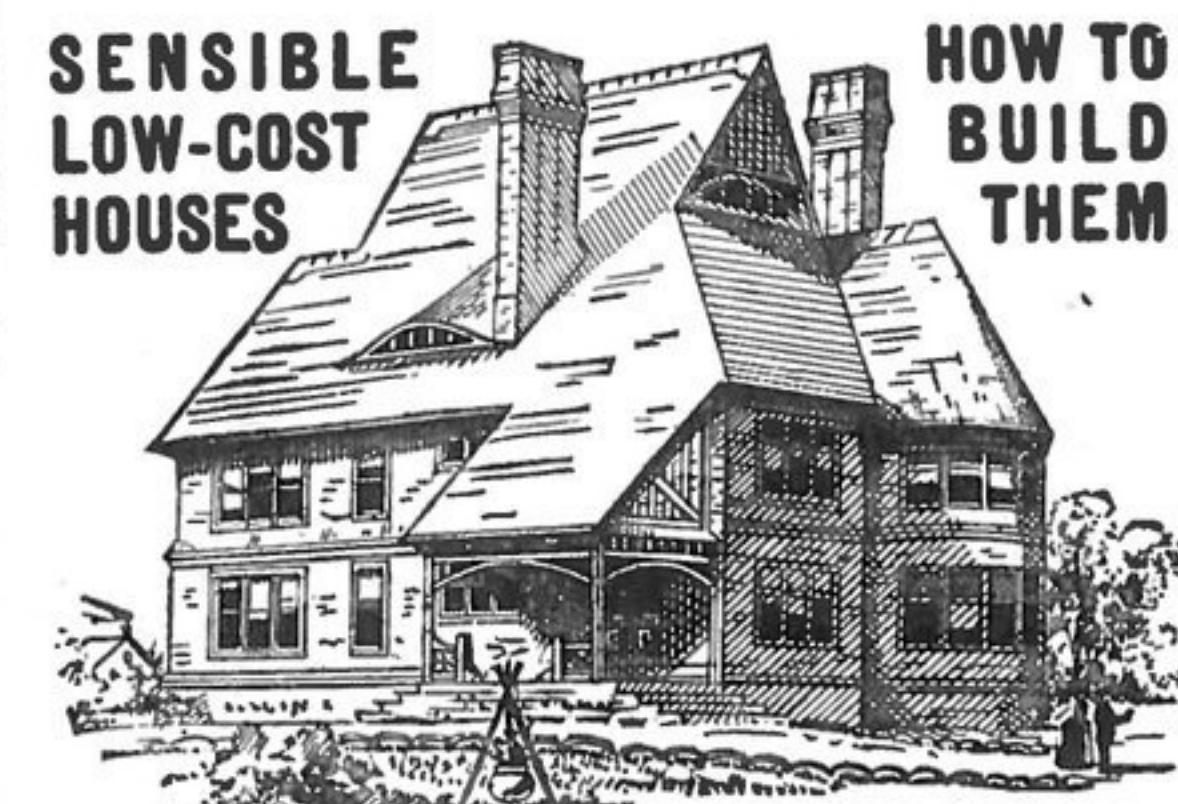
Rye flour was nominal at \$3.10@3.25 for sound superfine. Buckwheat flour dragged at \$2@2.15. Corn products were dull at the following quotations: Coarse, 83@85c; fine yellow, \$1.00@1.03; fine white, \$1@1.05; Western and Southern in bbls, \$2.85@2.90; Brandywine and Sagamore, \$3.00; granulated, \$3.15@3.50; grits, \$3@3.25; hominy nominal.

BUFFALO MARKETS.

FLOUR—City ground—Patent spring, \$7.25@7.50; straight Duluth spring, \$6.75@7.00; bakers' spring, \$5.45@5.50; amber \$6.00@6.25; white winter, \$6.00@6.25. Western—Patent spring, \$7.25@7.50; Straight Minnesota Bakers', 6.75@7.00; clear do, \$5.25@5.50; white winter \$6.00@6.25; low grade flour, \$4.00@4.50; Grahamflour, \$6.00@6.25; rye flour, \$4.00@4.25 per bbl. buckwheat flour, \$2.75 per 100 lbs. **OATMEAL**—Akron, \$6.45; Western, \$6.20 per bbl. **CORNMEAL**—Coarse, 90c.; fine, 95c.; granulated, \$1.75 per cwt. **WHEAT**—Chicago May closed at \$1.01 $\frac{1}{2}$, an advance of 1¢ from the opening price. Limits were 82c over for old No. 1 hard, 28c for New No. 2 hard, 15c for No. 1 Northern, and 10c over May for No. 2 Northern. The market was decidedly dull, sales including 1,400 bu new at \$1.28, and at the close 3 carloads do at \$1.24 $\frac{1}{2}$; winter wheat dull; sales 1,000 bu No. 2 red at \$1.02 $\frac{1}{2}$ and 1 carload do at \$1.02 $\frac{1}{2}$; No. 3 red quoted at 78 $\frac{1}{2}$ c.; No. 1 white scarce; quoted at \$1.07 $\frac{1}{2}$ to arrive. **CORN**—Railroads are forcing car loads off track and the market is unsettled; sales 8 carloads No. 3 yellow at 87 $\frac{1}{2}$ @88c, 2 do choice do at 88 $\frac{1}{2}$ c, 6 do No. 3 at 86 $\frac{1}{2}$ @88 $\frac{1}{2}$ c, No. 4 held at 86c, No. 4 yellow 87c, ungraded 85c. **OATS**—Dull and weak; sale 2 carloads No. 3 white near the close at 29 $\frac{1}{2}$ c; No. 2 white quoted at 31 $\frac{1}{2}$ c; No. 2 mixed 28 $\frac{1}{2}$ @28 $\frac{1}{2}$ c on track; white State from wagons 88@84c. **BARLEY**—Quiet; No. 1 Canadian quoted at 81@82c; No. 2 do 77@80c; No. 3 extra 75@76c; No. 3 67@71c. **RYE**—Nominal; No. 2 Western quoted at 54@55c on track. **ELEVATING RATES**—Until further notice the charge for elevating, receiving, weighing and discharging sound grain will be $\frac{1}{4}$ of a cent per bu as follows: For storing each ten days or parts thereof $\frac{1}{4}$ of 1 cent, per bu. No grain will be received for transfer. The above charge is to be paid by the con-

signee of the grain. **WINTER STORAGE**—After November 10, 1888, for each ten days, or part thereof, $\frac{1}{4}$ c per bu until such charge (accumulated after the first ten days), shall amount to 2c per bu; then free until 5 days after the opening of canal navigation in 1889. On all grain in store before November 10, $\frac{1}{4}$ c per for each ten days, or part thereof, until such charge (accumulated after November 10), shall amount to 2c per bu; then free until 5 days after the opening of canal navigation..

From Sept. 1, 1888, to Jan. 5, 1889, the wheat exports from all American ports and Montreal were 30,000,000 bushels. In 1887 the amount was 38,000,000, in 1886 it was 51,000,000, in 1885 it was 24,000,000, in 1884 it was 50,000,000, in 1883 it was 48,000,000, in 1882 it was 64,000,000, in 1881 it was 50,000,000, in 1880 it was 67,000,000 and in 1879 it was 82,000,000 bushels for the corresponding period. During the last six months of 1888 the total wheat and wheat flour exports from the United States equalled 50,017,825 bushels, against 72,741,333 bushels for the same period in 1887. Exports are likely to increase largely during February and March.



A large Atlas, giving illustrations and full descriptions of 56 desirable modern houses, costing from \$800 to \$1500. Every detail profusely illustrated, showing many valuable original ideas. Shows what to do and what not to do. Houses adapted to all climates described. The latest, best, and only cheap work published. Sent by mail on receipt of \$1.00.
NATIONAL ARCHITECT'S UNION, PHILA., PA.

THE "HARLOW" Positive Feed Lubricators.

For Marine and Stationary Engines, Steam Pumps, Electrical and other Machinery.

MAXIMUM ECONOMY IN OIL. MARKED ECONOMY IN FUEL.

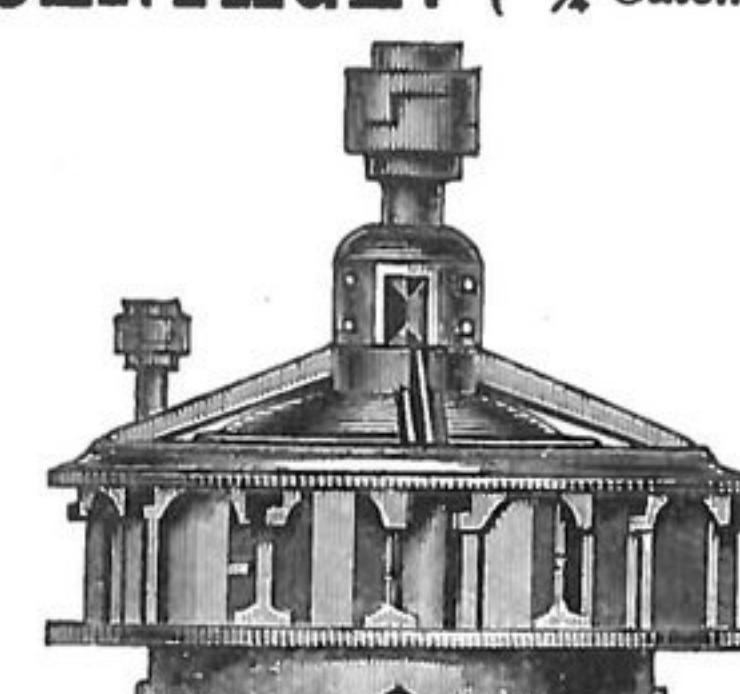
Not dependent upon or operated by Steam Pressure, Condensation or Gravity. Not affected by changes of temperature.

Being operated by some moving portion of the engine or machine to be lubricated, the "Harlow Lubricator" starts and stops with the engine or machine being lubricated, without requiring the slightest attention from the engineer or operator, always delivering the oil in any amount from a drop to a constant stream.

The cup can be filled at any moment while the engine or machine being lubricated is in operation, without causing any leakage either of oil or steam.

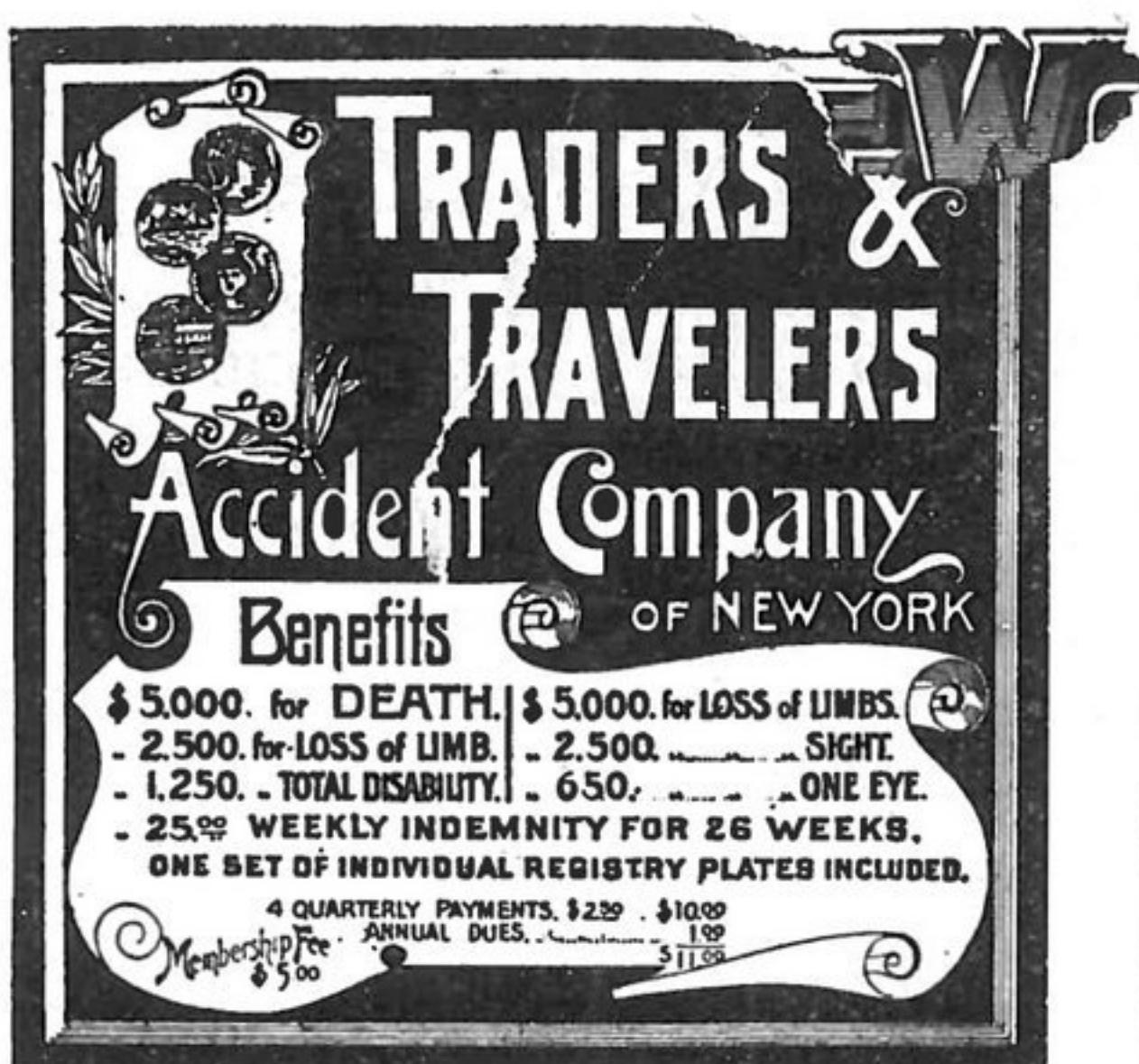
Harlow Lubricator Mfg. Co. BOSTON, Mass. U. S. A.

THE IMPROVED "SUCCESS"
THIS WHEEL IS BOTH DURABLE AND CHEAP
PERCENTAGE: { Full Gate..... 86.20
 $\frac{1}{2}$ Gate..... 86.07
 $\frac{3}{4}$ Gate..... 81.25



SEND FOR PAMPHLET TO

S. Morgan Smith, York, Pa.



287 BROADWAY, N. Y.

"Cooper on Belting."

A Treatise on the Use of Belting for the Transmission of Power. With illustrations of approved and actual methods of arranging Main Driving and Quarter Twist Belts, and of Belt Fastenings. Examples and Rules in great number for exhibiting and calculating the size and driving power of belts. Plain, Particular and Practical Directions for the Treatment, Care and Management of Belts. Descriptions of many varieties of Beltings, together with chapters on the Transmission of Power by Ropes; by Iron and Wood Frictional Gearing; on the Strength of Belting Leather; and on the Experimental Investigations of Morin, Briggs, and others, for determining the Friction of Belts under different tensions, which are presented clearly and fully, in the text and tables unabridged. By JOHN H.

A SUPER, M. E. Second Edition. One vol., demi Has h^oo. Cloth, \$3.50. Sent post-paid on receipt of price. Address,

McFAUL & NOLAN, BUFFALO, N. Y.

Adver.
Made
for our
own
war.
ER
to P.
re
ss
to water
than
any
other
pa
WHEEL.



"DE MAN WOT KNOWS IT ALL
is allus a-makin' change, a-
buyin' ob experience."

The man who does not think that he "Knows it All" about Pumps, Steam Engines and Boilers Can find out a great deal about them in

GRIMSHAW'S PUMP CATECHISM - \$1.00
STEAM ENGINE CATECHISM - - - 2.00
BOILER CATECHISM - - - - - 2.00
PREPARING FOR INDICATION - - 1.00
BY MAIL POSTPAID.

McFaul & Nolan, - Buffalo, N. Y.

THE BEST AND CHEAPEST CORN AND COB CRUSHER IN THE WORLD.

All wearing parts cast of a steel mixture. Notice difference in construction. Most area where most work is done, where all other crushers have least area where most work is done. Low priced machinery is not the cheapest, considering durability and efficiency. Sent on 30 days' trial when satisfactory reference is furnished.

Please Send for Circulars.

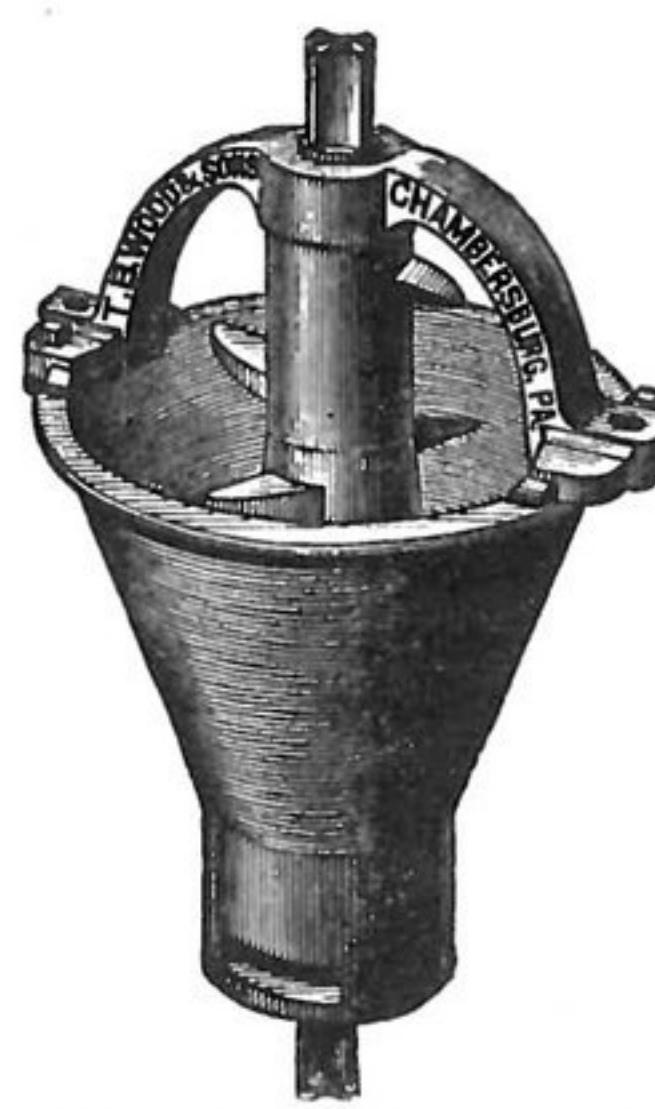
LEFT-HAND
MILL.
DRIVEN
FROM
ABOVE.



RIGHT-HAND RUNNER.

R. C. McCULLEY, LANCASTER, PENN.

\$15 Will Buy the Best and Cheapest CORN AND COB CRUSHER

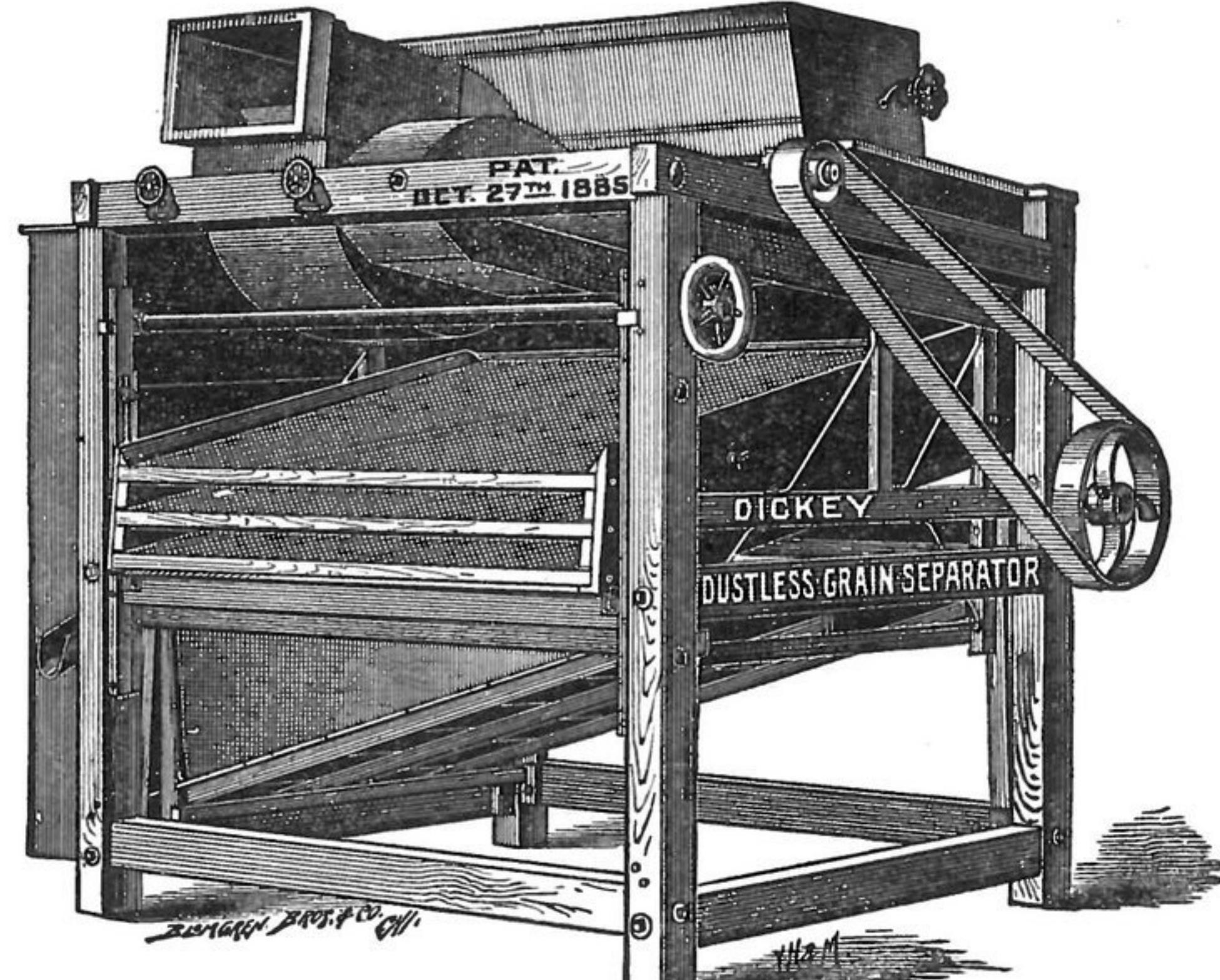
IN THE WORLD!

It can be driven either from above or below. Thousands of these Crushers are now in use throughout the United States and Canada, and are giving entire satisfaction. Send for circular, giving testimonials from millers who are using our Crusher, and know a good thing when they see it.

T. B. WOOD & SONS, CHAMBERSBURG, PA.

DICKEY DUSTLESS GRAIN AND FLAX SEPARATOR

This Separator is our latest and most perfect, and guaranteed to be the superior of any now on the market. This machine, as can be seen by the cut, is not a warehouse fanning mill with one patent attachment, but is a Dustless Separator, made for the express purpose of thoroughly cleaning and separating all kinds of grain in large quantities; its construction is such that the working machinery and weight is all within the parts or anchors.

**WE CLAIM FOR IT SUPERIORITY.****WE CLAIM FOR IT SUPERIORITY.**

We claim for it Superiority over everything of the kind made, in simpleness, durability, saving of power, capacity and cost of construction. Its height will accommodate any number of spouts from different points, without moving machine. They have a capacity from 700 to 1,500 bushels per hour. We also control exclusively the manufacture of the celebrated Dickey Giant, End and Side Shake, Warehouse Mills, that have attained such a world-wide reputation. Sent on approval to any reliable party. For full particulars address,

A. P. DICKEY MANUFACTURING CO.. Successors to Dickey & Pease, RACINE, WIS.



RELIANCE OIL & GREASE CO., CLEVELAND, O.

—MANUFACTURERS OF—

Finest Lubricants for Milling Plants. A Challenge to the World.

WRITE US.

"VALVE OLEINE"—675 Degrees Fire Test, Cylinder Oil.

"CHIEF"—Roller Mill Lubricant.

"NIAGARA"—Belt Grease.

"RUSSIAN"—Engine and Machine Oil.

"ANCHOR"—Roller Mill Grease.

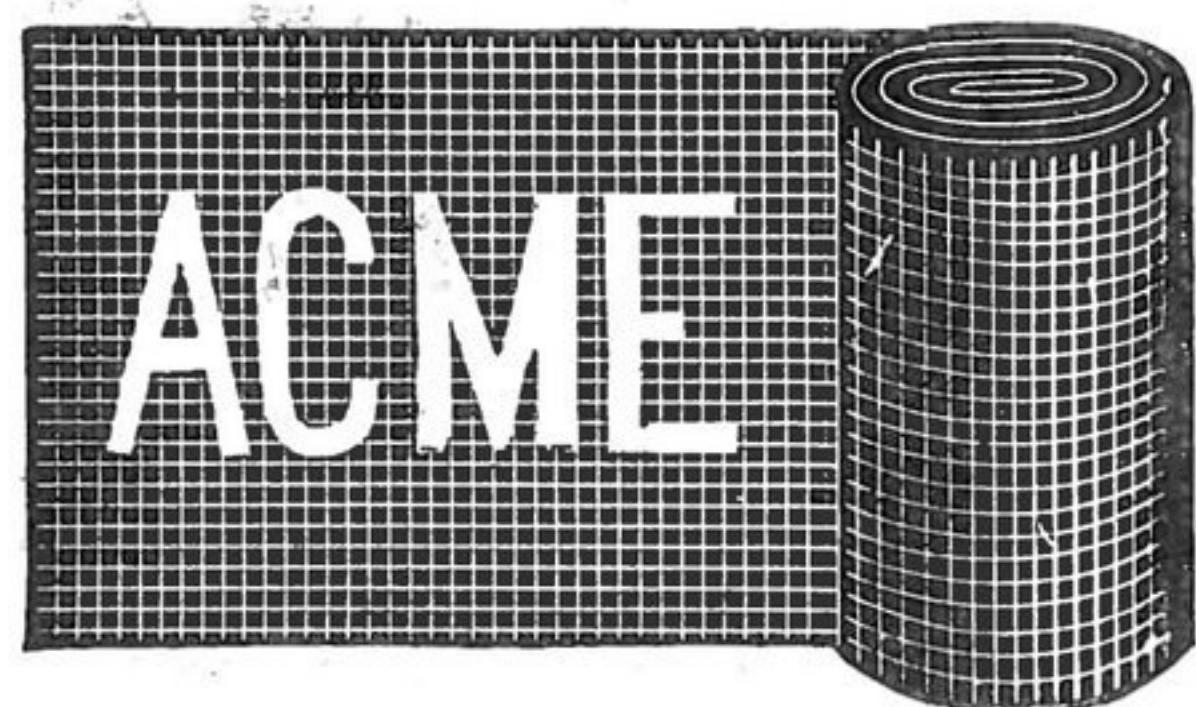
"CHELSEA"—Scale Solvent, Best on Market.

SPECIAL
HIGH GRADE
PRODUCTS

Agents Wanted.

FREE SAMPLES, CATALOGUE, AND ALL INFORMATION.

WIRE BOLTING CLOTH—STEEL, BRASS & TINNED



[ESTABLISHED 1844]
Exclusive Manufacturers of the
**"ACME" STEEL TEMPERED
BATTERY & BOLTING WIRE CLOTH.**

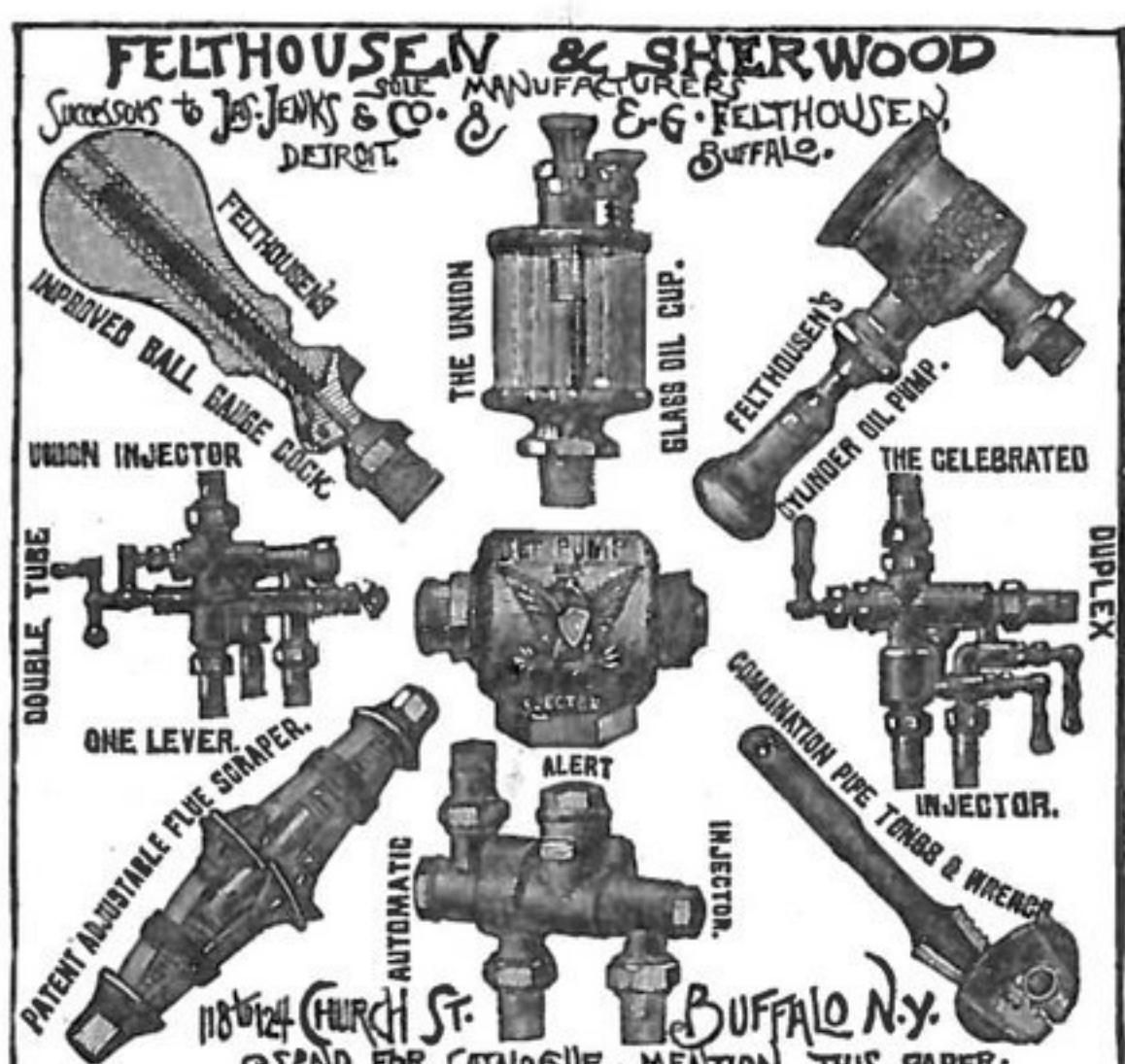
Also manufacturers of Bran Duster Cloth, Plated Wire Mill Screen Cloth, Smut Cloth, Brass and Copper Wire Cloth. A full line constantly on hand. Send for samples and price lists.

Brooklyn Wire Cloth Works.

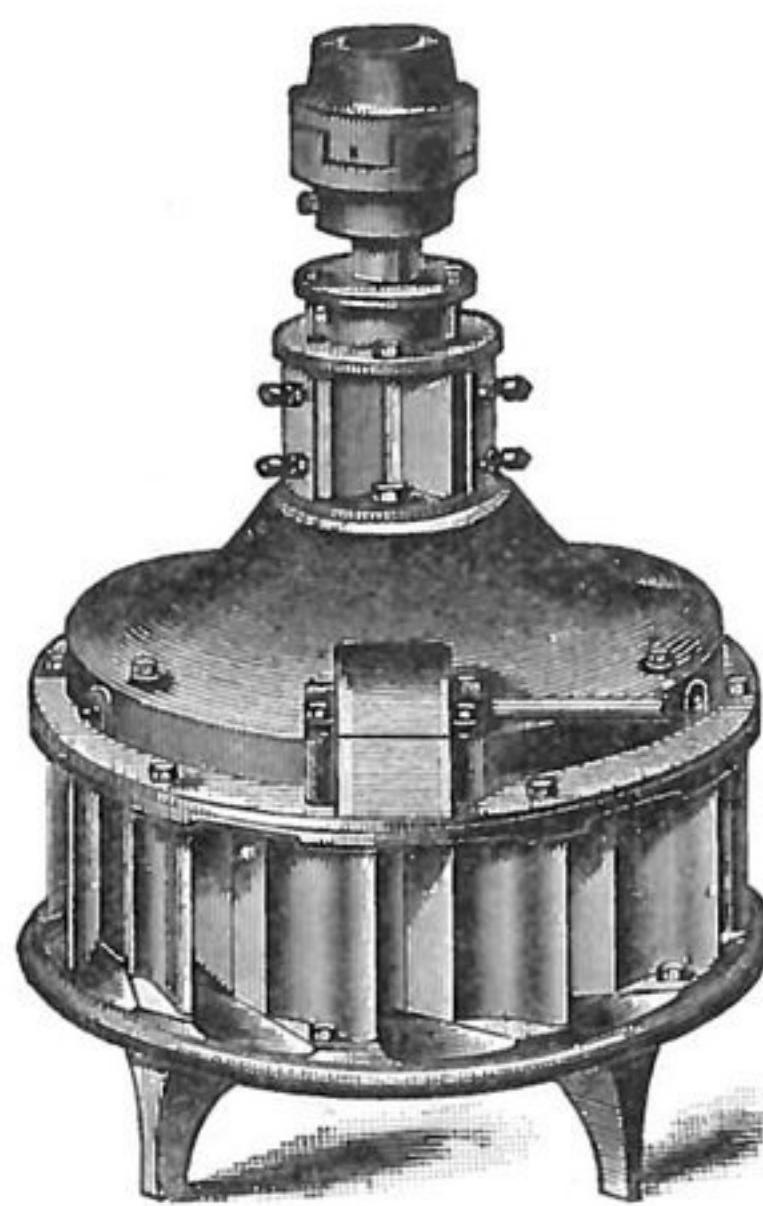
NO. 107 JOHN STREET, NEW YORK.

CLOTHS MADE UP WITH PATENT BINDING WHEN DESIRED.

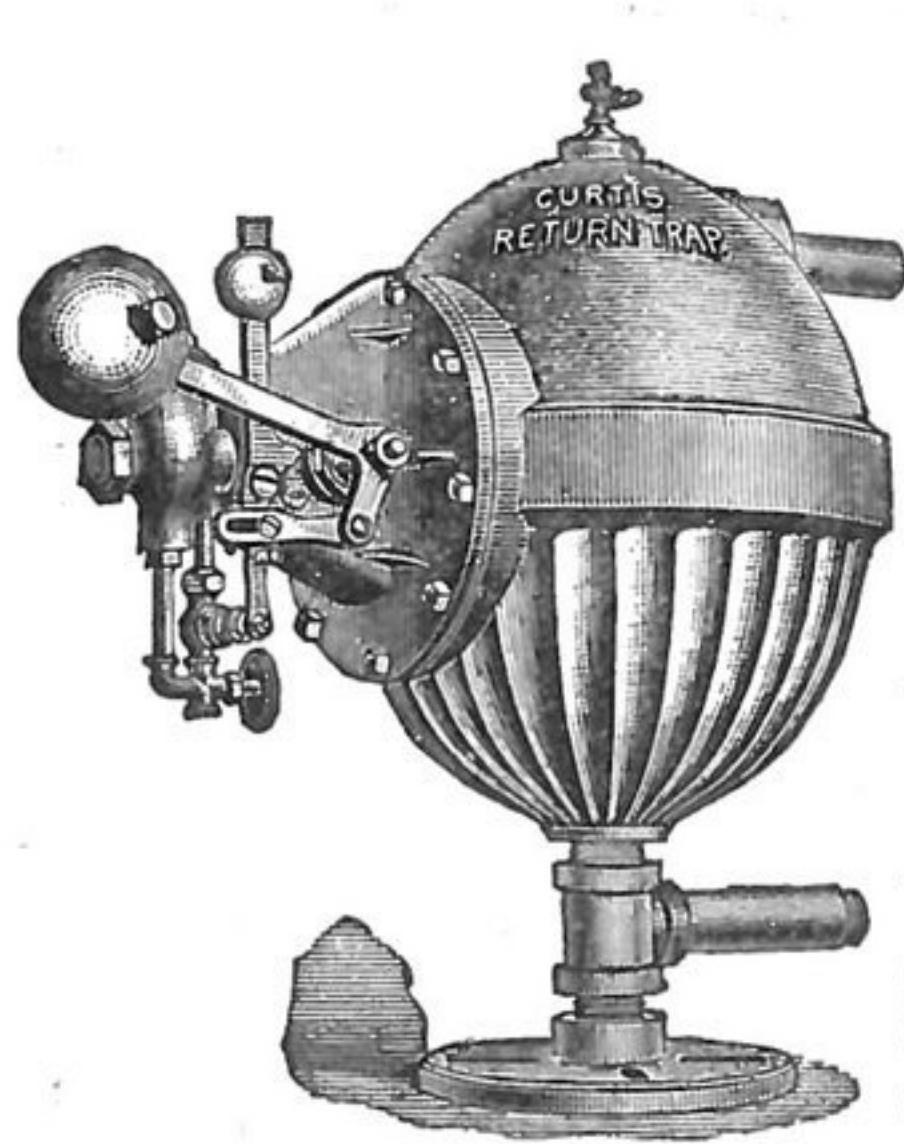
The Boston
Downhill Co.
WOOD
ENGRAVING,
LITHOGRAPHY.



IMPROVED STANDARD TURBINE
BURNT ALM'S



New Illustrated and Descriptive
Catalogue sent Free. Address
YORK, PA.



THE CURTIS PATENT RETURN STEAM TRAP.

IT is noiseless, positive, rapid, will return all condensation back into the boiler, and works equally well in connection with reduced pressure or exhaust steam, also when the return is below the water line of the boiler.

THE CURTIS REGULATOR COMPANY,
No. 74 BEVERLY ST., BOSTON, MASS.

GENERAL AGENCIES.

NEW YORK, 109 Liberty st.
PHILADELPHIA, 2035 N. Front st.
MINNEAPOLIS, 210 S. Third st.

CHICAGO, 218 Lake st.
ST. LOUIS, 707 Market st.
NEW ORLEANS, 21 Union st.



MOORE'S
PATENT
BARREL HEATER.

For all
kinds of coop-
erage. Thousands
in use in all parts of the
U. S. Send for Circular.

JOLIET STOVE WORKS JOLIET ILL.

* THE INK *
WITH WHICH THIS PAPER IS PRINTED
IS MADE BY THE
QUEEN CITY PRINTING INK CO.
CINCINNATI, O.

Chemical Fire Extinguisher Co.

38 & 40 LASALLE STREET,
CHICAGO, -- ILL.

MANUFACTURERS OF THE

Only Chemical Automatic Fire Extinguisher M

No Freezing; No Corroding; No Leak
Cheapness and Absolute Reliability and
duction in Cost of Insurance. We also man-
ufacture everything in the line of Chemical E
tinguishers, from a full 100 gallon engin-
quart Hand Fire Extinguisher, of th
and most approved kind. One gallon o
chemical is equal to 500 gallons of wate
SEND FOR ILLUSTRATED CATALOGU



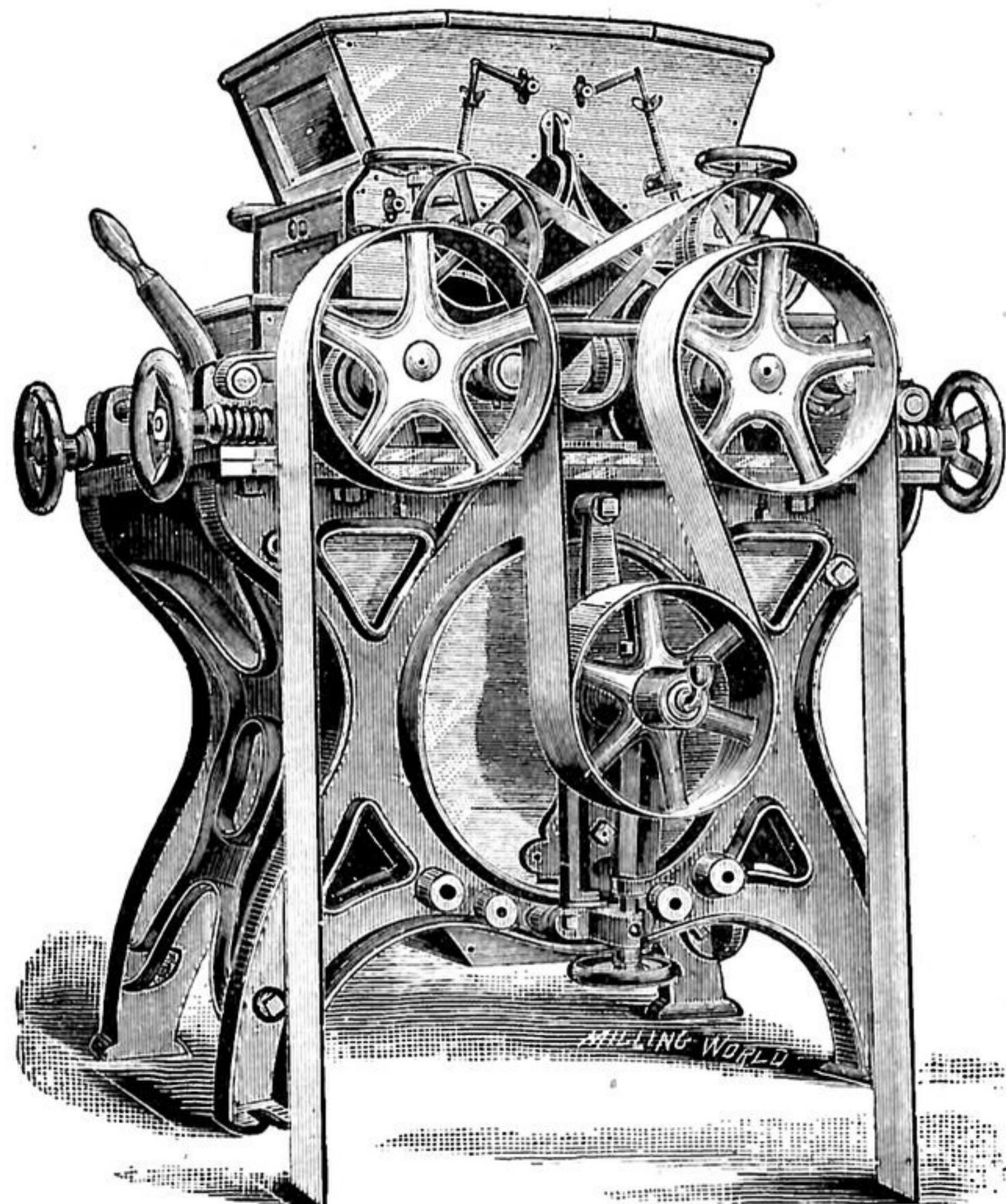
H. J. DEAL
Specialty Company.
Flour and Grain Testing Appliances,
Specialties for the Milling, Flour and
Grain Trades.
BUCKRUS, O., U. S. A.

SPECIALTIES
ILLUSTRATED FOLDER "T"
FOR THE HOLIDAYS.
NOW READY.

Please write for a copy at once. Only mailed to cus-
tomers and on application. This is the most complete
and extensive list of specialties ever issued by us. Write
at once and secure a copy.

THE H. J. DEAL SPECIALTY CO.
BUCKRUS, OHIO, U. S. A.

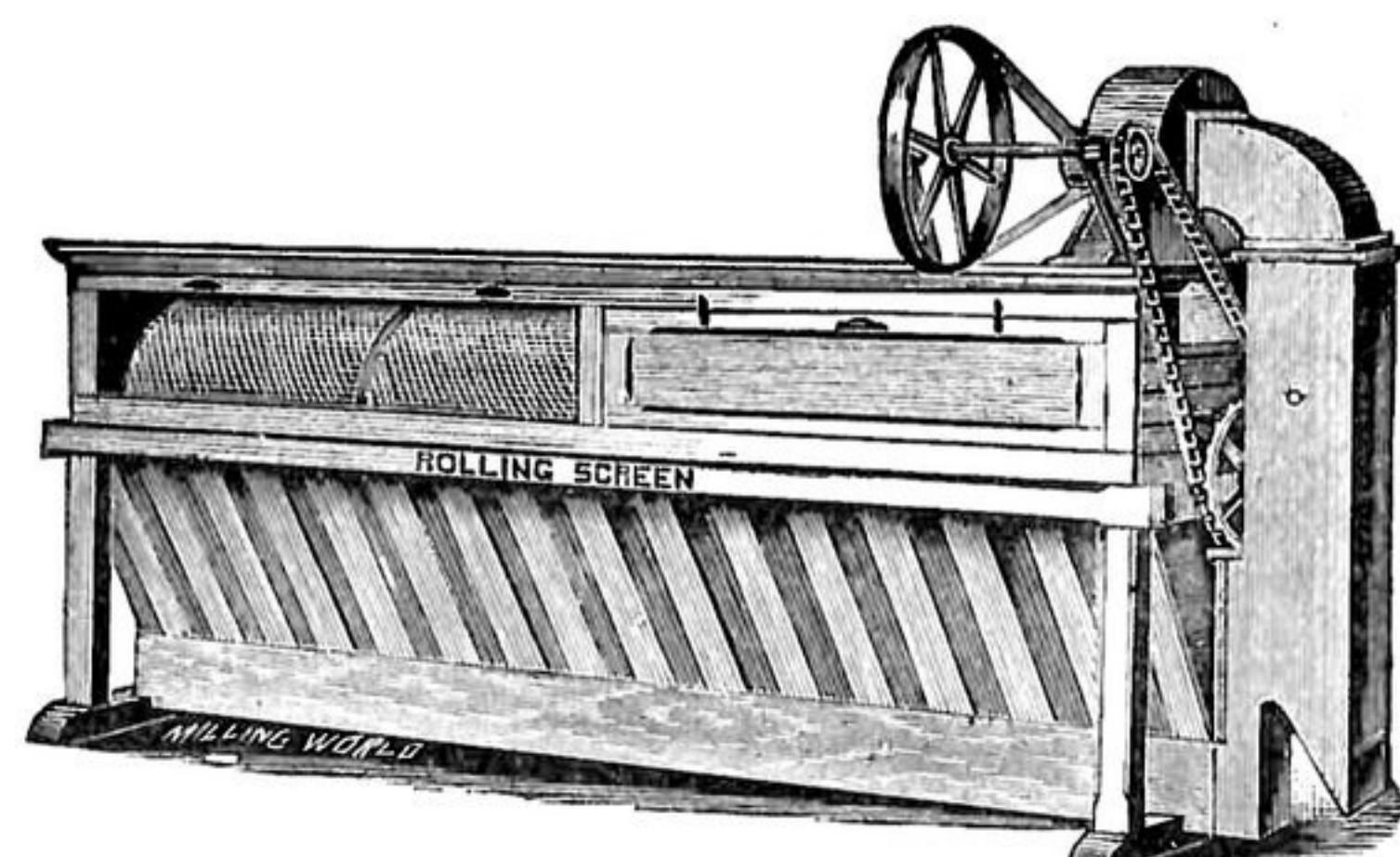
JOHN HUTCHISON MFG. CO., Mill Builders and Mill Furnishers.



"The Rickerson." The original six inch 4 Roller Mill. We now own the patents on this mill and after greatly improving the mill manufacture them in four sizes:

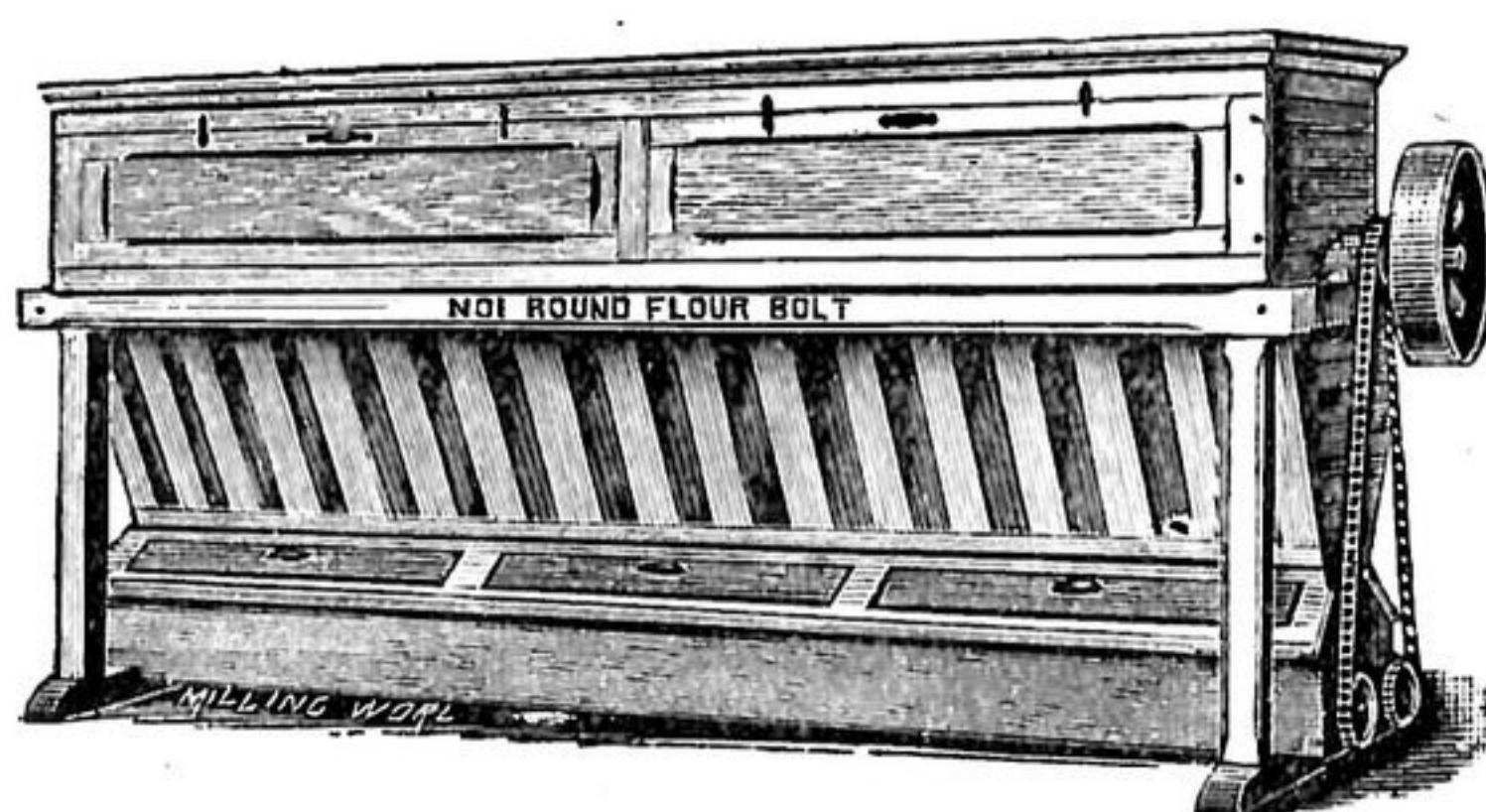
6x12 inch.
6x15 "

6x18 inch.
6x20 "

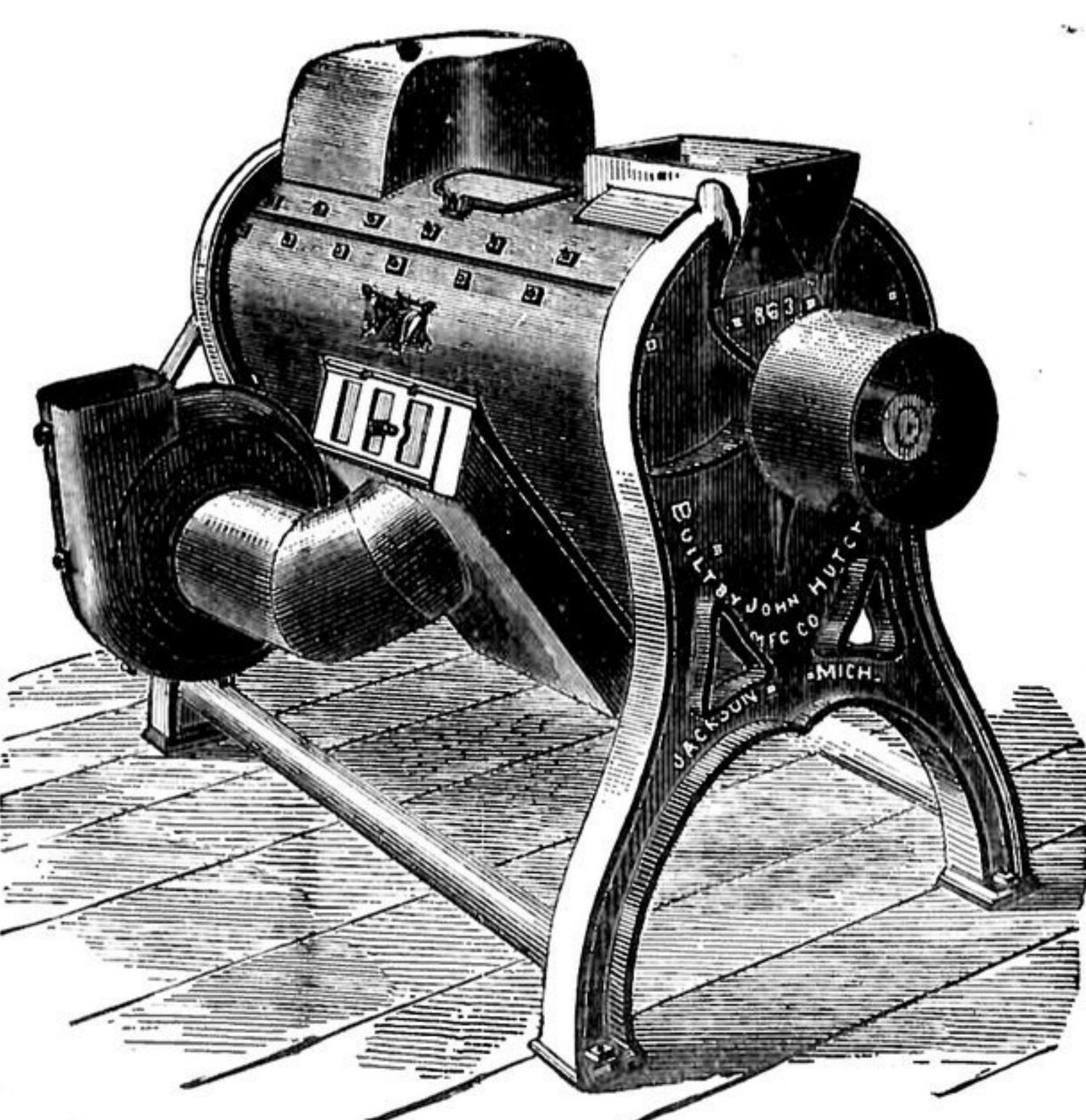


The above cut represents our New Rolling Screen, which is absolutely dustless and has as much scouring qualities as any two scouring machines now being made.

Send for Estimates for Our Full Roller Mills of any Capacity.



The above cut shows our New Round Slow Running Flour Bolt. We also build a Cylinder or Round Scalping Reel and we have lately built a number of new mills of medium capacity, using our Roller Mills, our Round Flour Bolts and Scalping Reels, getting better results than is usually obtained.



Hutchison's New Dustless Iron Corn Sheller, especially adapted for Mill and Elevator use.

—ADDRESS ALL CORRESPONDENCE TO:—

John Hutchison Mfg. Co.
JACKSON, · · · MICHIGAN.



ELEVATOR BUCKET.

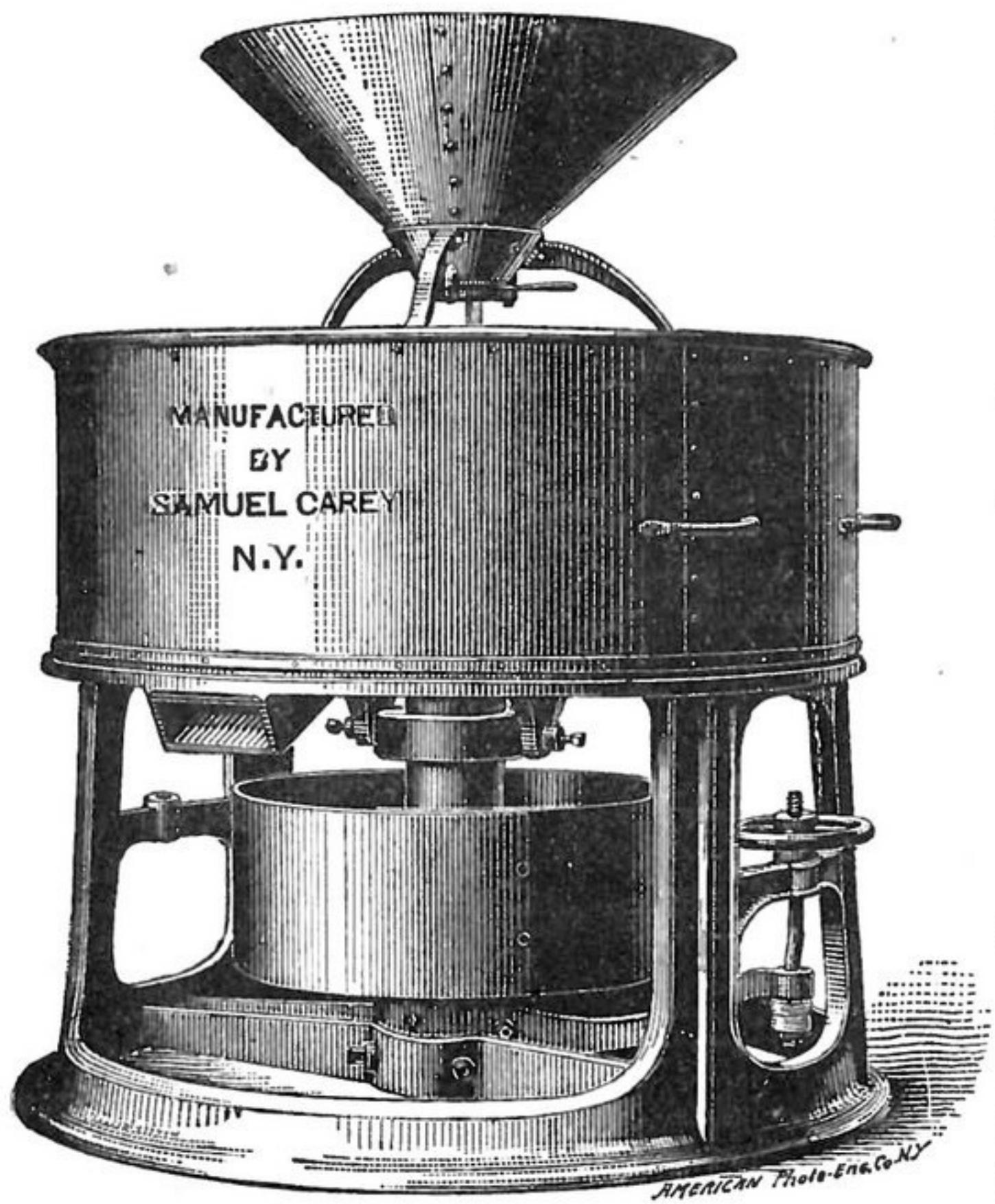
PLEASE NOTICE.

Our patents not only cover Seamless, Drawn, Stamped, Pressed or Forged Elevator Buckets; but also Pre-Dated and Cover Round-Cornered Elevator Buckets when made Seamless, and are the Only patents ever issued in the World for a Pressed, Stamped, Drawn or Forged Seamless Elevator Bucket.

THE AVERY STAMPING CO.,
Successors to The Avery Elevator Bucket Co..
Cleveland, Ohio, U. S. A.



CLAY BUCKET.



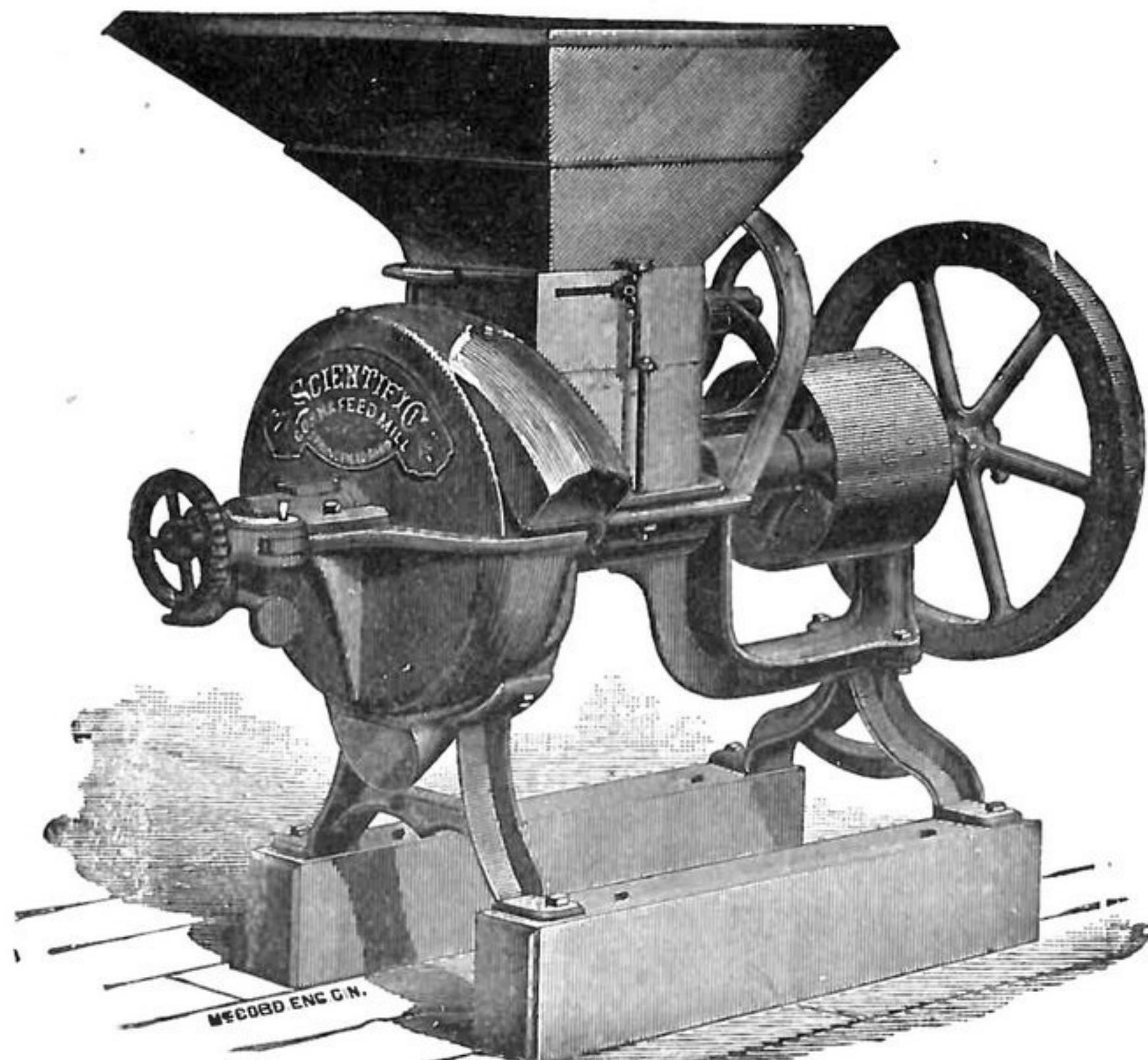
**SELF-TRAMMING
PORTABLE MILL
BEST GRINDING MILL MADE.
BOLTING CLOTH**

CLOTHS MADE UP TO FIT ANY SIZE REEL.

**BURR AND ESOPUS
MILLSTONES.**

SPINDLES, PULLEYS, MILL PICKS, BELTING, ELEVATOR BUCKETS AND GENERAL MILL FURNISHINGS. FOR CATALOGUE AND PRICES, ADDRESS

SAMUEL CAREY, 17 BROADWAY, NEW YORK



**THE SCIENTIFIC
GRINDING MILL.**

POSITIVELY THE BEST MILL ON EARTH.

GRINDS PERFECTLY, EAR CORN, SHELL CORN, AND ALL GRAINS.

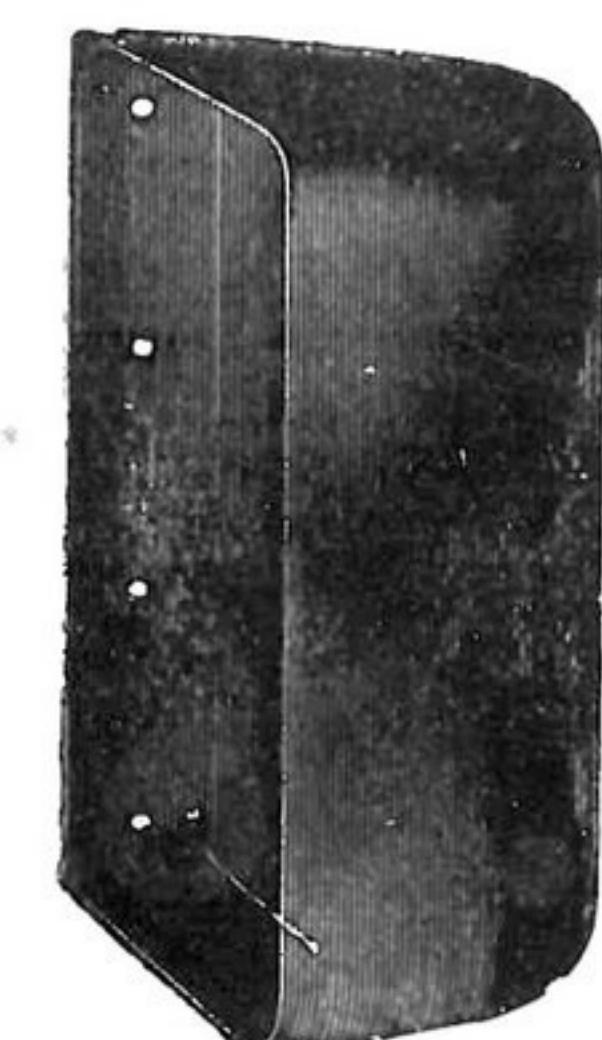
GRINDING PLATES A SPECIAL METAL

Hard as Steel, Guaranteed to Grind from Five to Eight Thousand Bushels before wearing out.

SEND FOR ILLUSTRATED CATALOGUE, PRICES, ETC.

THE FOOS MFG. CO.

SPRINGFIELD OHIO.



STILL ON TOP.

Perhaps the HIGHEST COMPLIMENT that could be paid the "Salem" bucket is the fact that during the past few years ITS SHAPE HAS BEEN SO CLOSELY IMITATED by other manufacturers as to infringe our patented rights, but experience reveals the IMPERFECTIONS OF IMITATIONS, and we therefore take it as a FURTHER COMPLIMENT to the "SALEM" bucket that some of its old patrons who were *Induced to Try the Imitations have now Returned to the Salem Bucket, thereby Acknowledging it to be the Most Satisfactory.* Don't be deceived by other makes of buckets that are claimed to be "Just as Good." Insist upon having the ORIGINAL AND RELIABLE SALEM BUCKET. All legitimate Salem buckets are plainly marked with the word

SALEM

W. J. CLARK & CO., SOLE Manufacturers SALEM, OHIO.
THORNBURGH & GLESSNER, General Agents, CHICAGO, ILL.